

SERIES

SCIENCE

The Main Book

By A Group of Supervisors



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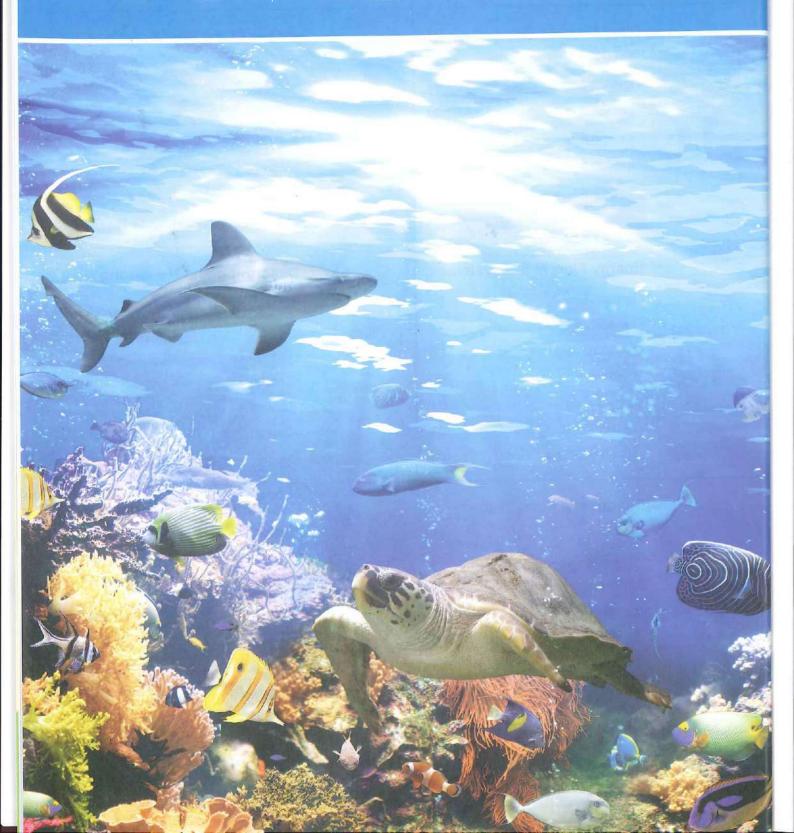
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Theme One: Systems

LND

Interactions of Organisms



Get Started

What I Already Know

- · Plants are found everywhere around us.
- There are some basic needs that plants depend on to grow up and survive such as :
 - Air.

- Water.
- Sunlight.
- The opposite picture shows two potted plants:

Plant (A) has green leaves and grows well, while plant (B) is wilted and has yellow leaves.





Plant (A)

Plant (B)

- · Plant (B) cannot grow well and die due to one or all the following reasons :
 - It may be placed in a dark place, so it doesn't get sunlight.
 - It may not be watered regularly.
 - It may be placed in a bad aerated area, so it doesn't get enough fresh and clean air.
- · In this unit, you are going to study:
 - How plants use sunlight, air and water to make their own food.
 - Types of living organisms: producers, consumers and decomposers.
 - The interaction between living organisms to get their needed energy through what is called "Food Chains" and "Food Web".

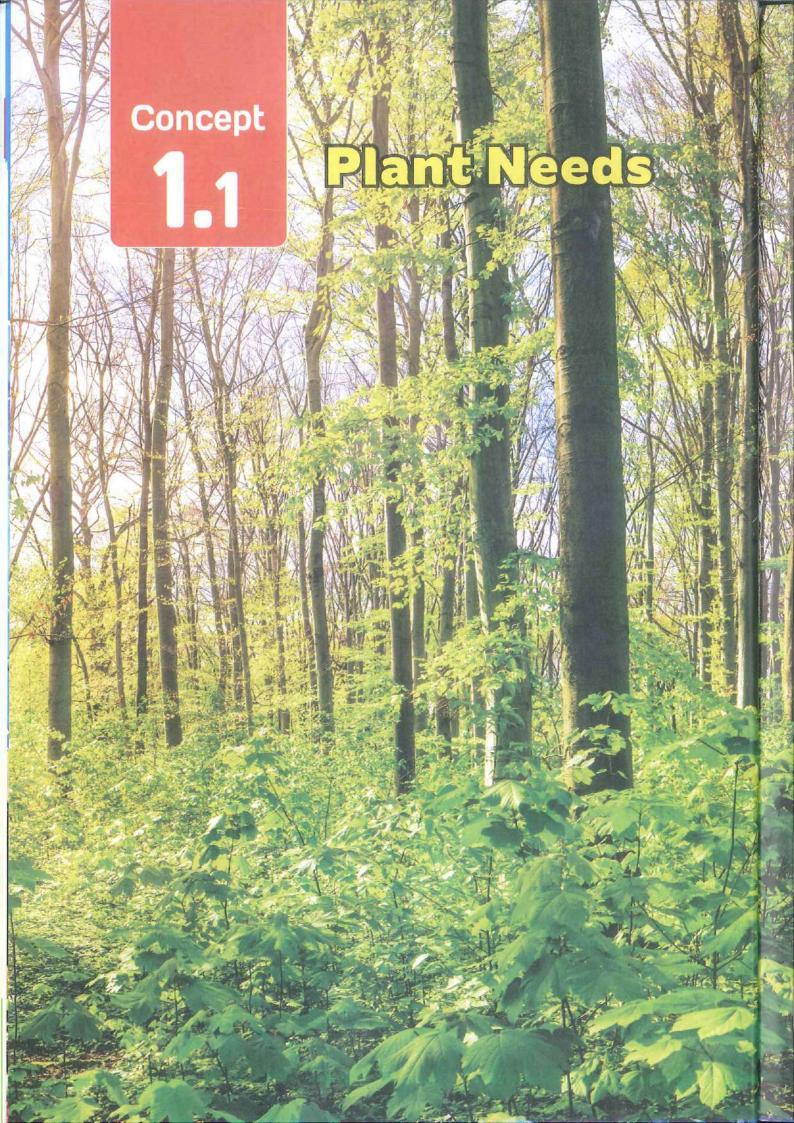


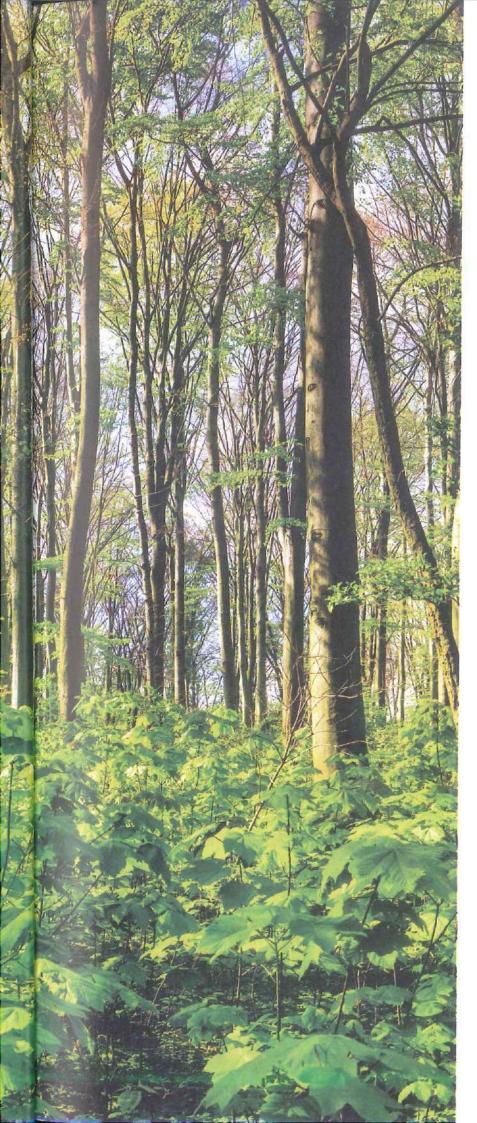
- What happens to an ecosystem, if a food chain in this ecosystem is interrupted.
- Unit Project : "Build a Miniature Ecosystem"

At the end of this unit, you are going to build a miniature ecosystem (small ecosystem) to show how living organisms depend on other living organisms to get their food. Also, the importance of some non-living things such as air, water, soil ... etc. for the survival in an ecosystem.



Ecosystem





Learning outcomes

By the end of this concept, your child will be able to:

- Use evidence to argue that plants use specialized structures to obtain the materials that they need to grow from Sun, air and water.
- Develop a model of how energy moves through plants.
- Develop a model of plant processes that use natural resources to complete life processes.
- Compare the structure and function of the transport system in plants with the circulatory systems in humans.

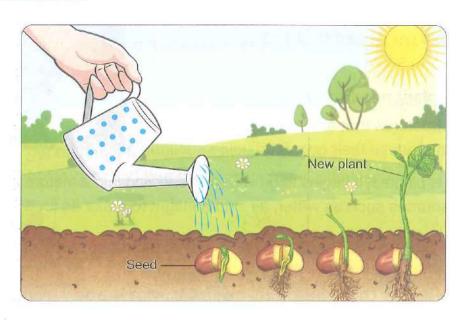
Key vocabulary

- Arteries
- · Photosynthesis · Vessels
- Circulatory system
- Plant
- Xylem
- Digestive system
- Stem
- Dispersal
- Stomata
- Germinate
- Survive
- Glucose
- System
- Nutrients
- Phloem
- Veins

Notes For Parents On Concept [1.1]

Lessons	Activities	What you should do with your child
P	Activity 1	Explain to your child how the structures of a plant use water, air and light to perform life processes.
1	Activity 2	Discuss with your child what the plant needs to grow and survive.
	Activity 3	Digital extension activity.
	Activity 4	Digital extension activity.
1	Activity 5	Discuss with your child basic and not basic plant needs for photosynthesis.
2	Activity 6	Help your child germinate some seeds in a wet paper towel then compare their growth to the growth of the other seeds which are placed in soil.
3	Activity 7	Help your child do an experiment to show the effect of light on plant growth.
3	Activity 8	Discuss with your child some plant structures.
А	Activity 9	Discuss with your child the different plant parts that take up and transport wate nutrients and air to make the plant food.
4	Activity 10	Help your child do an experiment to observe how water and nutrients move fro the roots to the leaves of a plant.
	Activity 11	Let your child think about the similarities and differences between the plant transport system and the human circulatory system.
	Activity 12	Digital extension activity.
5	Activity 13	Discuss with your child how plants make their own food.
	Activity 14	Digital extension activity.
	Activity 15	Discuss with your child the function of flowers of plants.
E TET	Activity 16	Help your child to think about ways of seed dispersal in nature.
6	Activity 17	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
	Activity 18	Digital extension activity.
	Activity 19	Let your child review the main points in this concept.

Activity 1 Can You Explain?



- When you observe the figure above that shows the steps of growing up of a bean seed to form a new plant, you can find out what the plant needs to grow.
- Plants need water, air, sunlight and space to grow.

▶ How do the structures of a plant use water, air and light to perform life processes ?

- · Plants have roots, stem, leaves and sometimes flowers or fruit.
- Plants use these specialized structures to obtain their basic needs of water, air and light.
- Each part of a plant has its own function, where the roots help the plant get water and nutrients from the soil and the other parts of the plant help it survive.

In this concept, we will study:

- · Plant basic needs.
- Plant structure.
- Parts of a plant.
- · Comparing plant and human systems.
- · Transport system of plants.
- · Plant food.
- Flowers and seeds.
- Seed dispersal.

bean seed	
space	
perform	
nutrients	

العناصر الغذائية

Activity (2) **Tree Needs**

▶ Look at the opposite picture, then put (√) or (x):

Both human and plant need food and water everyday to survive.



- What does a plant need to survive ?
 - Plants use structures that are unique among living organisms to produce their own food using sunlight.
 - When a tree is planted, it begins to grow from a seedling into a mature tree depending on some resources such as water, air and sunlight to make its food to survive.



Check your understanding

Circle the items that the plant needs to grow and survive :



Space





Water



Fruits



Meat



Sunlight



Air



Vegetables

Digital Extension Activity

Activity (3) " Growing " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.



Digital Extension Activity

Activity 4] " Water in the Desert " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

mature resources

Activity 5 What Do You Already Know About Plant Needs?

Plants and Animals

- Plants need water, air, sunlight and nutrients from soil as basic needs to live and grow.
- · Water and air are basic needs of plants, animals and humans.
- · Humans and other animals need to eat food to gain energy and nutrients to live and grow.
- Most plants get nutrients from soil and make their own food through a process known as "photosynthesis" that takes place in the plant leaves.

Plant Needs

- · Plants need some resources to live and grow such as :
 - Nutrients.

- Water.
- Carbon dioxide gas (a gas found in the air).
- Sunlight.
- Soil may not have been included as a basic plant need because :

Some plants only grow in the water.

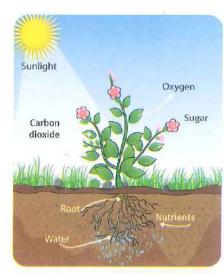


Some plants grow on other plants instead of having roots in the soil.



Plants and Food

- Plants make their own food which is a type of sugar that provides the plant with energy to grow.
- Plants make their food (sugar) in their leaves by means of photosynthesis process, where:
 - The roots of a plant absorb water and nutrients from the soil.
 - Water and nutrients are carried from the roots to the leaves through the stem.



gain energy by means of الطاقة

عن طريق

photosynthesis

absorb

البناء الضوئي غاز ثاني أكسيد الكربون carbon dioxide gas provide

instead of بدلًا من



Check your understanding

▶ Classify the following items into "Basic plant need for photosynthesis" or "Not basic plant need for photosynthesis":

(Water - Sunlight - Oxygen - Sugar - A forest - Carbon dioxide)

Basic plant need for photosynthesis	Not basic plant need for photosynthesis
*	

In the Assessment Book:

Try to answer: Self-Assessment (1)

Exercises on Lesson 1

Understand Apply Analyze Evaluate Create Choose the correct answer: 1. All the following are plant basic needs to make its own food, except a. water. b. air. c. sunlight. d. rocks. 2. The of plant get water and nutrients from the soil. b. stems a. roots c. leaves d. flowers 3. Humans and other animals need to eat to get a. oxygen gas. b. energy. c. carbon dioxide gas. d. soil. 4. Plants make their food by a process known as a. respiration. b. absorption. c. photosynthesis. d. digestion. 5. and are from the plant needs that help it make photosynthesis. a. Oxygen – water b. Sunlight – carbon dioxide c. Water – earth worms d. Nutrients – oxygen 6. Plants and humans are similar in some of their basic needs to survive such as a. sunlight and rocks. b. water and air. c. carbon dioxide and soil. d soil and water. 7. Plants take from the air to make its food. a. water b. oxygen gas c. carbon dioxide gas d. sugar 8. Which of the following sentences is wrong? a. Plants need sunlight to grow. b. Plant roots absorb water from the soil. c. Plants make their own food by respiration process. d. Plants make their own food in their leaves. 9. Water and nutrients are carried from the roots to the leaves through the b. soil. a. stem. c. fruits. d. flowers. • 10. In photosynthesis process, plant produces to get energy. a. oxygen gas b. sugar c. carbon dioxide d. water

Unit 1 | Concept

Understand

2	P	ut (v) or (x):		
	1	. Plants need water and air only to grow.	()
0	2	. All plants have roots, stems and leaves.	()
	3	. Each part of the plant has its own function.	()
0	4	. Stem of the plant absorbs water from the soil.	()
		. Human, animals and plants need food and water to survive.	()
		. Plants use the energy of the sunlight to make their own food.	Ì)
3	×	. Carbon dioxide gas is one of the plant needs that helps it to grow a survive.	nd ()
į	g	. Photosynthesis process takes place in the plant roots.	()
		. The plant can make its own food in the absence of water.	()
		•	()
	10	. Plants have unique structures that help them make their own food using sunlight.	()
	_	doing carmgitt.	λ.	
E	C	omplete the following sentences:		
	1.	. Different plants have three main common structures which are stem	1,	
		and		
0	2	. Plants absorb and from the soil through their		
0	3.	. Plants make their own food through process that takes pla	ace in their	٢
0	4.	. The stem carries water and nutrients from to of the	e plant.	
•	5.	The plants use the light of to make their own food.		
0	6.	. The food of plant is a type of which is made in their photosynthesis process.	by	
	7.	Soil is the source of and nutrients which the plant need to own food.	make its	
9	8.	Some plants may not depend on as they grow in the wate	r.	
4	V	rite the scientific term of each of the following:		
	1.	A gas taken from the air by leaves to help the plant to make its own food.	(١
	2			7
		A liquid substance that plants, animals and human need to survive.	<i>I</i>)
Ĭ	٥.	A part of the plant that carries water and nutrients from the roots to	,	1
	×		(- 100
			(
0	5.	The gas which is released from plants during photosynthesis.	()

6. The source of energy that the plant use to make photosynthesis.

	de gas – Water – Oxygen gas – Sunlight. (
6 Give reasons fo	r:
1. Roots have ir	nportant role in photosynthesis process of plants.
2. Photosynthes	sis process is important for plants to survive.
3. Some plants	don't need soil as a basic need.
7 What happens i	f ?
1. Plants have n	o stems.
2. Plants can't g	et carbon dioxide gas from air.
3. We put a gree	en plant in a dark room for many days.
8 Choose from co	lumn (B) what suits it in column (A):
(A)	(B)
1. Sunlight	a. is absorbed by the roots of the plant.
2. Soil	b. is necessary for plant's growth.
3. Water	c. is not a basic need for plant growth.
4. Oxygen	d. a gas which is produced during photosynthesis process.e. a gas which is the plant uses during photosynthesis process.
1	2
nutrients and wa	flowering plant in a pot, He put this plant in a soil rich in ater it everyday, he used to cover this pot everyday with a de it from his brother, after many days, do you think that this

plant will survive? And why?

- a. Yes, because it has nutrients and water.
- b. No, because it needs air and light.
- c. No, because plant doesn't need water and soil.
- d. Yes, because it can survive without sunlight.

▶ Look at the opposite picture, then put (√) or (x):

- 1. Plants need water, air and sunlight to grow. (
- Soil is not a basic need for plants to grow.



Now, we will germinate some seeds in a wet paper towel, measure their growth and then compare their growth to the growth of the other seeds which are placed in soil.

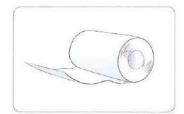
Note

Germinating means that the plant sprouts and begins to grow from a seed.

Tools



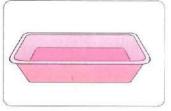
Plastic cup contains potting soil



Paper towels



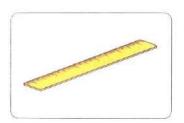
Six bean seeds (Fava beans)



Plastic plate



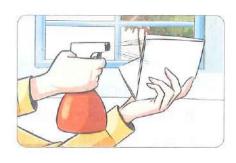
Water



Metric ruler

Steps

1. Use the water to wet the paper towel.



- 2. Place three seeds in the top half of the paper towel and fold the bottom half of the towel up so that it covers the seeds then, place the paper towel inside the plastic plate.
- Plant the other three seeds in the cup that contains potting soil then, water the seeds.
- Place the plate and the cup in a place where they can get sunlight.
- Check the growth of seeds over the next several days. Wet the paper towel and water the soil as needed.
- Measure the growth of each seed using the metric ruler.











Observations

 The initial growth of the seeds placed in the paper towel is similar to that of the seeds planted in the soil.

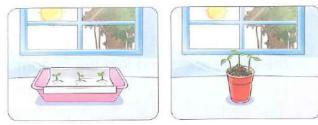




After 7 days

25

- The seeds grown without soil would not grow as quickly as the seeds in the soil.



After 14 days

Conclusions

- 1. The seeds can grow without soil if they have water and Sun.
- 2. Plants can grow without soil for a while, but finally they need soil.

Notes

- 1. Plants can grow in a hydroponic system instead of soil.
- 2. Hydroponic system means a place full of water that contains the important minerals for the plant to grow.



Hydroponic system

Check your understanding

▶ Put (√) or (x):

- 1. The presence of soil is necessary for seeds in their initial growth.
- 2. When bean seeds grown in a wet paper towel, they need soil after a while.

In the Assessment Book:

Try to answer: Self-Assessment (2)

Exercises on Lesson 2

Onderstand	OApply	Analyze	Evaluate	Creat	e
1 Choose the corr	rect answer:				
 1. When the pla called 	nt seed begins to g	row and makes s _l	prouts this process	is	
a. respiration.	b. germination.	c. absorption.	d. reproduction	1.	
 2. Hydroponic s 	ystem should be ful	l of and	to help the plan	it grow.	
a. water – oil		b. sunlight – wa			
c. sand – water	er	d. water – mine	erals		
3. If we put some	e bean seeds in a	facing the su	unlight, it may gern	ninate.	
a. dry paper to		b. wet paper to			
c. plastic plate	;	d. metric ruler			
 4. In the present 	ce of Sun and water	r, the seeds can g	erminate at the be	ginning	
of growth with	out the need of	aur e			
a. soil.	b. rocks.	c. insects.	d. dry paper tov	vel.	
2 Put (v) or (x):					
1. At the beginning	ng of germinating s	ome bean seeds.	they can grow		
without soil or			, 3	()
2. If we put the p	lant's seeds in a pla	ace containing mi	nerals and water, it	t .	
will grow.				()
 3. All seeds need 	d soil in its initial gro	owth.	1	()
4. The seeds that	t are put in a soil fu	ll of water and mi	nerals can grow slo	ower	
than the seeds	s that are put in a w	et paper towel.		()
	ys, the growth of pla			3	
similar to the g	rowth of plant's see	eds in a wet paper	r towel.	()
3 Look at the oppo	osite figure, then ch	noose the correct	answer:		
a. This process is					
(germinat	tion – photosynthes	is – respiration)	777		
b. Seeds of plant	will need	to complete		THE STATE OF THE S	
its growth after		. Sa	Chi to	* D	
(soil - wa	ter - incecte \				

Understand

4 What happens if ...?

- 1. We put a seed of bean in a soil.
 - 2. We put a bean seed in a wet paper towel for more than two months.

Look at the following figures then, complete the following sentences using the words below:

(soil – figure A – figure B)

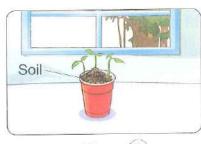


Figure (A)



Figure (B)

- 1. The seeds in grow faster than those in
- 2. Seeds in figure (B) should be transferred into to complete its growth.

LESSON

3

Activity 7 Sunlight: A Basic Need

▶ Look at the opposite pictures, then answer the question :

Does plant (B) grow as plant (A)? Why?





Plant (A)

Plant (B)

Plants make their own food through the photosynthesis process.

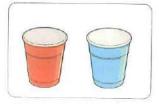
Photosynthesis process:

It is the process through which plants use the energy in sunlight to make their own food.

- · Green plants use their leaves to collect sunlight and carbon dioxide from the air.
- Inside the green plant, sunlight allows carbon dioxide to combine with water to make sugar, which gives the plant the energy it needs to grow.

Now, we will do an experiment to show the effect of light on plant growth.

Tools



Two plastic cups



Two bean seeds



Potting soil



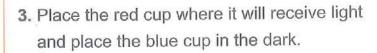
Water

Steps

 Add soil to the two cups, place the bean seeds on the soil, one per cup and cover the seeds with about 2 centimeters of soil.

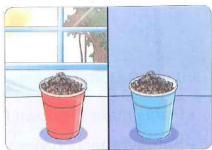


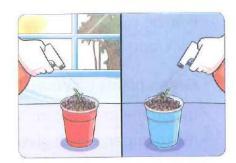
Add the same amount of water to each cup to moisten the soil.













▶ Observations

After two weeks, we observe that:

- The plant in the red cup grew taller than the plant in the blue cup.
- The plant in the red cup has four leaves with dark green color, while the plant in the blue cup has two small leaves with pale green color.

Conclusions

- Light is a basic need for the plants, like water, air and nutrients.
- Light is important to plant growth because plants use light to make their own food, so the plant without light does not grow well because it had less food.



Check your understanding

	Pu		/ -	1	44	
100				H I	X.I	
		B	, -		1	

- 1. In the absence of light, plants can make their own food.
- 2. When a plant grew in light, its leaves become pale green.

()

Activity 8 Plant Structure

In this activity, we will learn about plant parts and how the different plant structures help the plant survive.

Basic needs

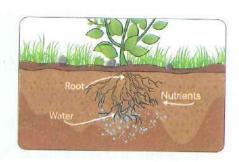
All living organisms have basic needs that they must meet to survive.

For example:

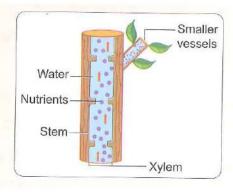
- Humans need water, air and food to live, while all plants need water and air to survive.
- Plants and humans are very different because plants use sunlight to make their own food from air and water, but humans get their food from plants and animals.

Plant structure

Plant's roots absorb water and nutrients from the soil and carry them to the rest of the plant.



- Water and nutrients move up the plant's stem through tubes or vessels called xylem.
- Smaller vessels of xylem connect the stem to the leaves.



₽ Note

d,

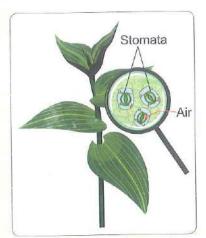
Plant's leaves get their needs of water and nutrients from the soil with the help of :

- Plant's roots.
- Xylem in the plant's stem.
- Smaller vessels of xylem connect the stem to the leaves.

- Leaves collect sunlight.
- Also, the air that plant need moves into the leaves through tiny openings called stomata.

Stomata:

They are pores on the surface of plant's leaves that allow gases to move into and out of the plant.





Check your understanding

Complete the following sentences using the words below:

(xylem - Plants - stomata - Humans - Roots)

- get their food from plants and animals.
- 2. absorb water from the soil and carry it to the other parts of the plant.
- 3. use sunlight to make their own food.
- 4. Water and nutrients move up the plant's stem through vessels known
- 5. The plant's leaves have tiny openings called

In the Assessment Book:

Try to answer:

Self-Assessment (3)

32

Exercises on Lesson 3

0	Und	erstand	○ Apply	Analyze	● Evaluate	Create
1	CI	noose the correc	ct answer :			
	1.	Sunlight and car	bon dioxide gas are	e collected by plant	's to make it	s own food
		a. roots		c. leaves		5 GWII 100d.
•	2.	The plant produ		n photosynthesis p	rocess that gives	it the
		a. oxygen gas		b. water		
		c. carbon dioxid	e gas	d. sugar		
	3.	The roots of a p	lant absorb	from the soil to he	elp it grow.	
		a. oxygen gas		b. carbon dioxide	1.00	
		c. sugar		d. water		
9	4.	Without th	ne plants can't gro	w well.		
		a. insects	b. rocks	c. sunlight	d. moonlight	
		The tubes that a are called		moving water and	nutrients up the pl	ant's stem
		a. roots.	b. xylem.	c. leaves.	d. flowers.	
	6.	Stomata are pre	sent on plant's	to allow air to p	pass through it.	
		a. roots		c. leaves	d. flowers	
	7.	can make	their own food.			
	ć	a. Plants only		b. Animals only		
	(c. Humans only		d. Plants and sor	ne animals	
	8. /	All of the following	ng materials can re	each the plant's lea	aves, except	4.4
	6	a. nutrients.		b. carbon dioxide	gas.	
	(c. water.		d. soil.		
	9	help the pl	ant's leaves to ge	t water and nutrier	nts from the soil.	
	8	. Roots only		b. Xylem only		
	C	Roots and xyle	em	d. Xylem and stor	mata	
1	0. /	All the following	parts are importan	it for plants to mak	e photosynthesis	process
	_	except				
		n. roots.		b. leaves.		
	C	. stems.		d. flowers.		

2 Choose from column (B) what suits it in column (A):

(A)	(B)
1. Roots	a. allow gases to come in and out the plant.
2. Stems 3. Leaves	 b. collect sunlight and carbon dioxide gas which combines with water to help the plant to make its own food.
4. Xylem 5. Stomata	c. tubes or vessels that move water and nutrients up the plant's stem.
o. otomata	d. absorb water and nutrients from the soil.
	e. transport nutrients and water from the roots to all parts of the plant.
	f. absorb oxygen gas from the soil.

	f. absorb oxygen gas from the soil.		
	1		
	Put (\(\nu\)) or (\(X\)):		
	1. Green plants can grow in a dark room.	(
6	Roots of plants collect sunlight and carbon dioxide gas from air.	(9
9	3. Xylem is important for plants to transfer water from plant's roots to leaves.	(į
	4. Water and carbon dioxide are absorbed by plant's root to help the plant		
	to grow.	(,
	5. When the plant makes photosynthesis process, its leaves become weak		
	and yellow.	(,
	6. Plants and humans are similar in the way of getting food.	()
	7. During photosynthesis process, plant absorbs carbon dioxide gas		
	from air through stomata.	()
	8. Light is important for plant growth.	()
0	9. There are tiny holes opening on the surface of stem that allow gases		
	to pass into the plant.	()
0	10. Water and nutrients reach the plant's leaves with the help of roots only.	()
0	11. Plants and humans need water and air to live.	()

Write the scientific term of each of the following:

- 1. The process by which plants make their own food by using the energy of sunlight.

	 3. Vessels in plant through which water and nutrients move up from roots to leaves. 	(
0	 4. Narrow holes spread on the surface of plant's leaves that allow gases to come in and out the plant. 	(
-	 5. The gas that the plant needs to make photosynthesis process. 	()
(6. A substance that is produced from the plant during photosynthesis	
	process and provides it with its needed energy.	()
E	Correct the underlined words:	
	1. Respiration process helps the plant to make its own food.	()
	2. Oxygen gas is absorbed by plant's leaves to make photosynthesis	,
	process.	()
	3. When a plant is placed in sunlight, its leaves become pale green.	()
	4. Humans can get their food from air and animals.	()
	5. Plant's leaves absorb water and nutrients from the soil.	()
	There are smaller vessels that connect the root to the leaves.	()
	7. There are tiny holes on the stem to allow gases passes into the plant.	()
	8. Stomata allow water to move into and out of the plant.	()
6	Complete the following sentences:	
	In photosynthesis process, green plant gets from air to ma food and produces gas that help us to breathe.	ake its own
0	Inside the green plant, sunlight allows carbon dioxide to combine wi that is absorbed from the soil by plant's	ith
•	The sugar that is produced from photosynthesis process provides the with	ne plant
	 There are vessels called in the plant that transport water a nutrients to other parts of plant. 	and
•	There are tiny holes in the plant's leaves called that allow move in or out the plant.	gases to
0	6. The presence of and air is very important for plant	ants to
	grow.	STATE OF THE STATE
۰	7. Without in the leaves of plants, gases can't move in or out plant.	of the
0	8. There are smaller vessels that transfer and nutrients from stem to	the plant's

Give reasons for:

1. The presence of stomata on the surface of plant's leaves.

Understand

- 2. Green plants can make their own food.
- 3. Xylem vessels are important for the plant.

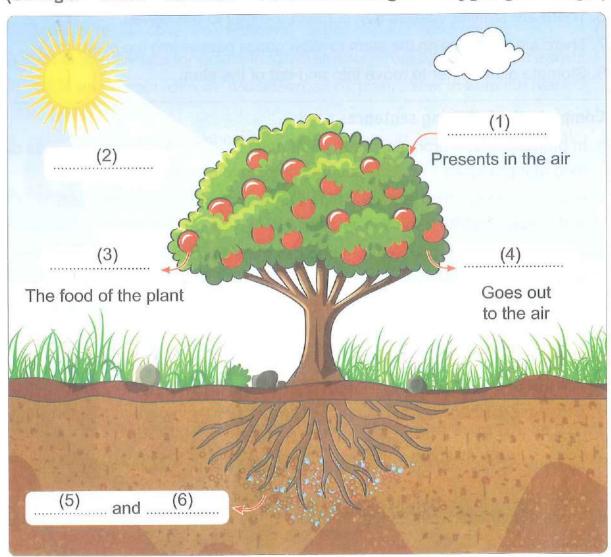
What happens if ...?

1. Stomata of a plant get closed for long time.

A plant is placed in a dark place for many days.

Label the following figure using the words below:

(Sunlight – Water – Minerals – Carbon dioxide gas – Oxygen gas – Sugar)



LESSON

4

Activity 9 Parts of a Plant

▶ Look at the opposite picture, then put (√) or (x):

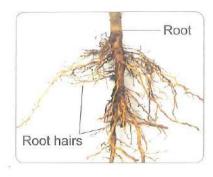
The main parts of plants are roots, stem, leaves and soil.
 Parts of a plant work together to make food for the plant.
 Although all plants look different, they have similar parts.

Now, we will study the different plant parts that take up and transport water, nutrients and air to make the plant food.

Roots

· Functions of the plant roots:

- Roots fix (anchor) the plant in the soil.
- Roots absorb (draw) water and nutrients from the soil, which are needed to make food of plants.
- Plant roots have hairlike features called root hairs that increase the amount of absorbed water and nutrients that the plant needs.



Stems

Functions of the plant stem :

- Stem transports water and nutrients to the rest of the plant through xylem.
- Stem supports leaves and flowers of the plant.

There are many forms of stems :

 Some plants have a wood stem, such as tree trunks and shrubs.



main wood stem trunk

shrubs

رئیسی ساق خشبیهٔ حدی

ancnor ساق حسبیه absorb جذع draw شجیرات

transport anchor ينقل يثبت يمتص

features root hairs increase support بروزات الشعيرات الجذرية

يرعم

Most flowers have upright stems.



 Some plants have a climb stem, such as vines (grapes).



- Some stems extend underground and they are called tubers, such as potato plant.



- Some stems extend above and along the ground and they are called runners.



Leaves

· Function of the plant leaves :

Leaves make food for the plant through photosynthesis process.

- Leaves need water, carbon dioxide gas and sunlight to make food.
- Leaves contain chlorophyll, which gives them their green color.
- · Chlorophyll captures energy from the sunlight.

Note

Xylem carry water from the roots to the stem, then to the leaves through smaller xylem tubes.

الدرنات

· There are two kinds of leaves:

Narrow leaves that look like needles, such as pine trees.



Flat, wide leaves.



Photosynthesis process

- Photosynthesis is a process that takes place inside the leaves.
- During photosynthesis, green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water to produce :
 - Nutrients (such as sugars, starches, fats and proteins) that the plant needs to live.
- Oxygen gas that animals and people need to breathe.
- As the photosynthesis process is completed inside the leaves, there are tubes called phloem that transport the food materials downward, from the leaves to the other parts of the plant.

Give a reason for:

The life on Earth without plants would be impossible.

Because during photosynthesis process plants produce oxygen gas that animals and people need to breathe.



Check your understanding

▶ Choose from column (B) what suits it in column (A):

(A)	(B) we'll all yield entre evec.
1. Stems	a. make food for the plant.
2. Roots	b. gives leaves their green color.
3. Leaves	c. support leaves and flowers of the plant.
4. Chlorophyll	d. fix the plant in the soil.

1	2	3	4

narrow	ضيق	flat	مسطح	fats	الدهون
needles	الإبر	wide	عريض	breathe	يتنفس
pine tree	شجرة الصنوير	starches	النشويات	phloem	اللحاء
impossible	مستحيل				

Activity 10 Up the Stem

In this activity, we will observe how water and nutrients move from the roots of a plant up through the stem to its leaves and flowers and how transport vessels (xylem) in a plant work to help it stay alive.

Tools



Celery stalk



Glass cup containing water



Food coloring



Scissors

Steps

 Fill the cup with water, then add some drops of food coloring to the water.



Use the scissors to cut about 2 cm off the bottom of the stalk and place it in the cup of water.



Leave the stalk in the water cup until the next day.



4. Cut across the celery stalk, about 5 cm up from the bottom and observe the xylem vessels inside the stalk.



Observations

- The color of xylem will be turned into the same color of the water in the cup.
- Also, the color of leaves of celery will be turned into the same color of the water in the cup.



Conclusion

Water is transported through the xylem in the stem and move to the leaves through the smaller vessels of xylem that connect the stem to the leaves.



Check your understanding

▶ Put (√) or (x):

- 1. Water is transported through the xylem in the plant's stem and leaves. ()
- 2. Xylem helps carry water upward the plant. ()

In the Assessment Book:

Try to answer: Self-Assessment 4

Exercises on Lesson 4

Apply Create Understand Analyze Evaluate 1 Choose the correct answer: 1. The plant's anchor it in the soil. b. stems d. flowers a. leaves c. roots 2. There are in the plant's roots that help the plant to get more water and nutrients. d. flowers a. vessels b. root hairs c. stomata 3. plant has climb stem. b. Tomato c. Vine d. Pine a. Potato 4. The kind of stems that extend underground are called a. climb stems. b. tubers. d. wood stems. c. runners. 5. Potato plant has stem. b. climb c. tuber d. runner a. upright 6. Apple trees have a. wood stems. b. climb stems. c. tubers. d. runners. 7. tree has narrow leaves. a. Potato b. Pine c. Acacia d. Grapes 8. The green plants can make their own food through c. leaves. a. roots. b. stems. d. flowers. 9. The green color of plant's leaves is due to the presence of a. xylem. b. phloem. c. chlorophyll. d. stomata. • 10. Food materials are transported from the leaves to other parts of the plant through b. phloem. c. chlorophyll. d. stomata. a. xylem. 11. Animals and humans need to breathe. b. carbon dioxide gas a. oxygen gas c. water vapor d. sugar 12. Green plants produce all the following substances during photosynthesis process, except b. carborn dioxide gas. a. oxygen gas. c. starches. d. fats.

Į	2 Put (V) or (X):		
-	1. The plant is fixed in the soil by the help of its roots.	()
	 2. Plant's stem has hairs that absorb oxygen gas from the air. 	()
100	 3. Xylem helps the plant to get water from the soil. 	()
•	 4. A tree trunk is a type of stems called runners. 	()
•	5. Potato plants have stems called tubers.	()
4	6. Chlorophyll in plant's roots absorbs sunlight.	()
	7. The leaves of pine trees are flat and wide.	()
9	 8. Phloem transports food materials downward from the leaves to other 	∍r	
	parts of the plant.	()
6	 9. Photosynthesis process produces carbon dioxide gas that help anir 	nals	
	and humans to breathe.	()
0	10. Plants need sunlight, oxygen gas and water to make its own food.	()
8	11. Vines have a kind of stems called climb stems.	()
	12. During photosynthesis process, the plant makes sugars, starches, p	oroteins	
	and fats that help it to survive.	()
8	13. Chlorophyll helps the plant leaves to absorb sunlight to make		9000
	photosynthesis process.	()
3	Write the scientific term of each of the following:		
•	Small structures in the plant's roots that increase the absorption		
	of water and nutrients from the soil.	()
0	2. A part of the plant that fix it in the soil.	()
0	3. A part of the plant that supports its leaves and flowers.	()
0	4. The kind of plant's stem in vines.	()
8	5. The stems that are extended above and along the ground.	()
	6. A plant that has a tuber stem.	()
0	7. It is found in plant's leaves that gives them green color and absorbs		
	energy from the sunlight.	()
0	8. Tubes in the plant that transport food materials from the leaves		
	to other parts of the plant.	()
0	9. A gas produced during photosynthesis and is needed for respiration		
	of living organisms.	()

Unit 1 | Concept

Understand

4	Correct the underlined words:	
•	Plant's leaves help it to be fixed in the soil.	(
	2. The plant can absorb more water and nutrients from the soil	
	by the help of xylem that are found in the roots.	(
	3. Tree trunks are climb stems.	(
	4. Potato plant's stems called runners that extend underground.	(
	5. The stems that extend above and along the ground are called to	ubers.
		(
	6. Most flowers have wood stems.	(
	7. Animals and people can't live without carbon dioxide gas to bre	athe.
		(
	8. The leaves of pine trees are flat and wide.	(
	9. Chlorophyll in plant's roots absorbs energy from the sunlight.	(
	10. Xylem tubes inside the leaves transport food materials downwa	
	from the leaves to other parts of the plant.	(
5	Complete the following sentences :	
	The presence of in plant's roots help it to absorb more	9
	and nutrients from the soil.	
	There are many kinds of stems on plants like in vines in potato.	and
•	3. Plant's roots the plant in the soil and absorb the soil.	. and water from
	4. Shrubs have stems, while most flowers have	stems.
	5. The stems that are extended above the ground are called	
0	6. Pine trees have leaves that look like	
0	7. Plant's leaves during photosynthesis process produce	., starches, fats
	8 Food materials that are produced by process are tran	sported from the

leaves to the other parts of the plant through tubes called

9. The green color of plant's leaves is due to the presence of that

absorbs energy from

-				
The second	Give	MARKE	anc	TON
	Lat Me	1600	UIIIS	1071
III. 9 /01	No. of Lot of Street,	4		

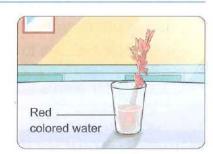
- 1. There is no life on Earth in the absence of plants.
- 2. Chlorophyll in plant's leaves has an important role in photosynthesis process.
- 3. The presence of hairlike structure in plant's roots.

What happens if ...?

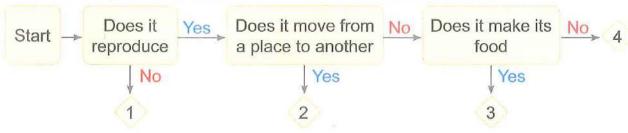
- 1. Plant's leaves don't contain chlorophyll.
- The plant doesn't have roots.
- 3. The plant stop making photosynthesis process for several days.

8 Look at the opposite figure then answer:

- a. The color of leaves of celery will be
- b. Water is transported through that connect the stem to the leaves.



Observe the following diagram then choose the correct answer:



Which of the following represents a celery plant?

a. 1

- b. 2
- c. 3
- d. 4

the

45

▶ Put (√) or (x):

- 1. Plant needs water and air like human to survive.
- 2. Plant doesn't need energy like human to grow.

Now, we will determine how human systems might be similar to plant systems.

Need for energy

Both plants and humans need energy ar	nd gases from the air to survive and grow.
Plants	Humans
 Plants can manufacture their own energy in the form of glucose through photosynthesis process. Glucose: 	 Humans must eat food throughout the day to get energy, as they chew and swallow the food, nutrients are absorbed into the blood.
It is the plant sugar that is produced during photosynthesis and provides energy for the plant to survive and grow.	 Air enters the human body through the nose and mouth then travels to the lungs, where oxygen is absorbed into circulating blood.

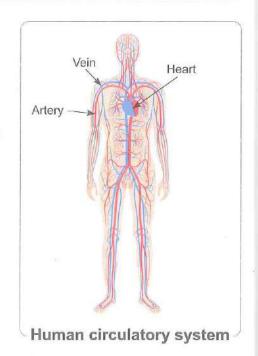
Human circulatory system

Gases enter plants through the leaves.

- The human circulatory system consists of the heart and blood vessels (tubes).
- The blood vessels in the human circulatory system transport nutrients and oxygen through the blood to the body cells.
- The human circulatory system has two different types of vessels which are arteries and veins.

Circulatory system:

It is the system that transports blood and other fluids throughout the body.



comparing manufacture chew

fluids

مقارنة swallow circulating يمضغ blood سوائل

يبتلع circulatory system دائر arteries الدم veins

الجهاز الدوري شرايين . Blood moves in only one direction in a human's arteries or veins, where :

Arteries carry blood that is rich with oxygen and nutrients (glucose) from the heart to the body cells, so that the body can grow.

Veins return the blood that carries carbon dioxide and is low in nutrients and oxygen back to the heart, then to the lungs where the blood carries oxygen again.



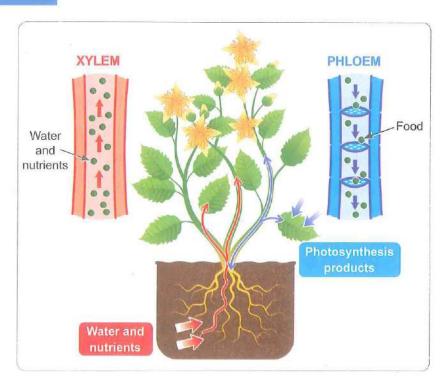
You can probably see your veins and arteries through your skin on your hands or arms.

Comparing the human body to plants

- Like the human body, a plant needs energy to grow.
- In plants; water, nutrients and the plant food formed during photosynthesis are all move through a system of tubes or vessels called the transport system.
- Similar to the way arteries and veins pump blood in a specific direction to and from the heart, the transport system in plants have one-way vessels that move important substances between the parts of the plant.

Transport system of plants

- Water and nutrients taken up by the roots through xylem are transported to the leaves to make the plant food.
- When the water arrive to the leaves, they begin to produce glucose sugar.
- The phloem carries the glucose sugar downward into all other parts of the plant to grow.



▶ The following table shows the similarities and differences between the plant transport system and the human circulatory system :

Plant transport system

Human circulatory system

Similarities J

- Both have systems of vessels to transport water, nutrients and gases.
- Both have one-way vessels (tubes).

Differences |

- The transport system in plant is a system of tubes called xylem and phloem that transport different materials around the plant parts.
- Xylem tubes carry water and nutrients from the roots to the leaves.
- Phloem tubes carry sugars from the leaves to all plant parts.

- The transport system in human is the circulatory system that moves blood around the human body.
- Arteries carry blood that is rich with oxygen and nutrients from the heart to all body parts.
- Veins carry blood that contains carbon dioxide and is low in nutrients and oxygen from all body parts back to the heart.

Check your understanding

▶ Put (√) or (x):

Both plants and humans must take in gases from the air.	()
2. Veins carry blood rich in oxygen and nutrients.	()
3. Phloem tubes carry water to leaves.	()
4. Vessels in plants and humans systems are one-way vessels.	()

Digital Extension Activity

Activity 12 " Obtaining Materials " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

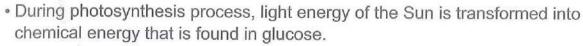
Activity 13 Plant Food

Plant food

int

- Plants have some structures that take in water and nutrients from the soil and move them to other parts of the plant.
- Plants also have other structures that absorb sunlight and take in carbon dioxide from air.
- In plant's leaves, sunlight helps water combine with carbon dioxide to make glucose sugar which is used by plant cells for food.





Glucose for energy

- Phloem moves glucose from the leaves to the other parts of the plants.
- Plant cells use glucose as a source of energy to live and grow.
- During photosynthesis process, the plant also produces oxygen and water which are released into the air.
- Other living organisms, such as animals and humans, depend on the oxygen that plants release during photosynthesis process for their respiration.

Check your understanding

Arrange the following sentences to describe the process that converts
energy from the Sun into food in the correct order:
() Vessels move glucose from the leaves to other parts of the plant.
() Plant releases oxygen that other living organisms need for respiration.
() Light from the Sun hits plant's leaves.
() Plant parts use the glucose for their needs and growth.
() The leaves transform light energy from the Sun into glucose (chemical energy).

Digital Extension Activity

Activity 14 " Leaves and Food Production " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

respiration

Activity 15 Flowers and Seeds

You have learned that the plant's leaves play an important role in the photosynthesis process to make its own food from some materials such as water, sunlight and air.

Flowers of plants

- Some plants have large colorful flowers.
- Some other plants, such as grasses, have very small flowers and some flowers are not very colorful.
- · Flowers are the reproductive parts of many plants.

Plant reproduction:

It is the process of making new plants.



Function of the plant's flowers:

Flowers produce seeds for the plant that help the plant to reproduce.

 When seeds receive air, water and the correct temperature, they can grow into a new plant.

Notes

- In the sunflower, the seeds are the small dark-colored objects in the center of this flower.
- Plants use the food they make to produce flowers which are responsible for reproduction.





Check your understanding

▶ Put (√) or (x):

- 1. In plants, all flowers are responsible for reproduction.
- ()
- When seeds receive air and correct temperature only, they grow into a new plant.

In the Assessment Book :

Try to answer:
Self-Assessment (5)

colorful	
grasses	
reproduction	

Exercises on Lesson 5

OApply Understand Analyze Evaluate Create Choose the correct answer: 1. During photosynthesis process, the plant produces that provides it with energy to survive. a. carbon dioxide gas b. water c. glucose sugar d. oxygen gas 2. carry blood which is rich with oxygen and glucose from the heart to the body cells. a. Arteries b. Veins c. Lungs and veins d. Brain and veins 3. Blood rich in carbon dioxide gas return back to the heart through a. arteries. b. veins. c. lungs. d. xylem. 4. system in plants consists of tubes that water and nutrients move through it. a. Digestive b. Respiratory c. Transport d. Nervous 5. The system in human that moves blood in the human body is called system. a. digestive b. respiratory c. circulatory d. nervous 6. Glucose sugar is transported from the leaves to other parts of the plant through a. xylem. b. phloem. c. roots. d. stems. 7. In plant's leaves, light energy is converted into energy during photosynthesis. b. electric a. sound c. chemical d. kinetic 8. Plants can produce new seeds by a. roots. b. leaves. d. flowers. c stems 9. The reproductive parts of many plants are called a. veins. b. roots. c. leaves. d. flowers. 10. In, its seeds are small dark-colored objects in the center of this flower. a. pine tree b. sunflower c. potato plant d. celery Put (v) or (x): 1. Air enters plants through their roots. 2. Living organisms need energy and gases from the air to survive and grow. (

)

51

	•	Human circulatory system consists of the heart and the lungs.	()
	•	4. Arteries are vessels in human circulatory system that carry blood rich carbon dioxide gas.	in ()
		5. Oxygen and glucose are transported from the heart to the body cells		
		through arteries.	()
		6. Phloem transports water and nutrients from the roots to the leaves.	()
		7. Glucose is a type of sugar that is produced from plants during		50
	1	photosynthesis process.	()
		8. The reproductive parts of many plants are flowers.	()
	3	Correct the underlined words :		
	0	1. Flowers of plants produce root hairs that help the plant to reproduce. ()
		2. Blood rich with oxygen gas is carried by veins from the heart to the bo	ody pa	rts.
		3. Human circulatory system consists of the lungs and blood vessels. ()
		4. Each of xylem in plants and veins in human are two-ways vessels. ()
		5. Phloem tubes carry water and nutrient from the roots to the leaves. (
		7. During photosynthesis process, light energy is transformed into sound	energ	у.
		8. Plants make glucose during respiration process that provides them wi	th ene	ergy.
			•••••	
1	4	Write the scientific term of each of the following:		
	•	1. A type of sugar produced by the plant during photosynthesis process.		
		•		
	•	2. Blood vessels carry blood from the heart to all body parts. (•••••)
	•	3. Blood vessels carry blood from the body parts and return it back		
		to the heart. ()
	•	4. The human body system that is responsible for transportation		
		of blood and other fluids throughout the body. ()
	•	5. A system of tubes through which water, nutrients and plant food		
		Control on the property of the		,
		6. Parts of the plant that are responsible for reproduction. ()
		7. The process of producing new plants ()

No.	5	Complete the following sentences:
		Plants make their energy in the form of sugar during photosynthesis process.
0	, ;	Air enters plants through stomata on their, while it enters the human body through and
	,	3. Human circulatory system consists of and
	ì	4. Arteries carry blood rich in and oxygen from the heart to
•	, !	The blood and other fluids are transported throughout the body by the system.
	(6. The plant makes sugar in its during photosynthesis process.
•	7	7. Transport system in the plant consists of two types of vessels which are and
0	8	8. Arteries carry oxygen and nutrients from the to all body parts, while in plant's stem carry water from the to the leaves.
•	Ć	9. In plant's leaves, energy is converted into energy during photosynthesis process.
	10	0. Flowers of the plant produce that help it to
•	11	1. There are two types of vessels in the human circulatory system which are
		and and
6		Give reasons for:
•	1	Flowers are important parts for the plant.
	0	Circulatory quatars has an important value for him and the control of the control
	_	2. Circulatory system has an important role for human to survive.
•		
•		3. Xylem in plant is a one-way vessel.
•	3	
•	3	
	3	
7		What happens if?
7	1	What happens if? Plants can't produce glucose sugar during photosynthesis process.
•	3	

....)

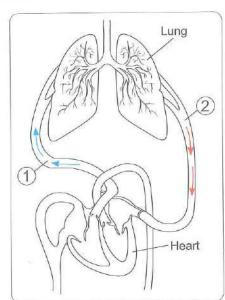
gy.) 3. We remove the flowers of a plant.

Look at the opposite figure, then answer the questions:

- a. Label the figure :
 - (1)
 - (2)
- b. Vessel number transfers blood rich in carbon dioxide gas, while vessel numbertransfers blood rich in oxygen gas.
- c. Choose the correct answer:

Vessels number 1 and 2 belong to system.

- a. digestive
- b. respiratory
- c. circulatory
- d. nervous



LESSON

6

Activity 16 Seed Dispersal

▶ Look at the opposite picture, then put (√) or (x):

- Plants use the energy they get from the food they make to produce seeds.
- Seeds fall from the plant to grow up in another place. ()



Seeds are transported from one place to another, this process is called seed dispersal.

Ways of seed dispersal in nature

- 1. Floating on water of rivers or lakes.
- 2. Traveling by wind.
- 3. Sticking to animal fur or human clothes.
- 4. Being eaten by animals and comes out with their stool.
- In this activity, we will investigate how seeds move from one place to another.
- ▶ Look at the following seeds in the pictures below, then decide how you think the seeds in the pictures move from one place to another:



Coconut seed



Maple seeds



Tomato seeds



Burdock seeds



Apple seeds



Dandelion seeds

Ways of seeds dispersal	Seeds	
Floating on water	Coconut seed	
Traveling by wind	Maple seeds - Dandelion seeds (both of them are light seeds)	
Sticking to animal fur	Burdock seeds (have spines)	
Being eaten by animals	Tomato seeds — Apple seeds	



Check your understanding

-	D &	1/1	~	14-7 .
	rut	(V)	OF	(x):

- 1. Light seeds travel in the air. ()
- 2. Seeds with spines stick to animal fur. (

Activity 17 Record Evidence Like A Scientist

You have learned a lot about plant needs and plant structures.

In this activity, which will be repeated at the end of each concept, we will learn how to think like scientists to answer a question about one of the main points of this concept through four main steps:

- Step 1: The Question.
- Step 2 : My Claim.
- Step 3: My Evidence.
- Step 4: My Scientific Explanation.

? Step 1 The Question

How do the structures of a plant use water, air and light to perform life processes?

Step 2 My Claim

- Plants use specialized structures to obtain their basic needs of water, air and light.
- Each part of a plant has a function to help it survive.

Note

Your claim should be formed of a sentence that gives an answer for the previous question in step 1.

Step 3 My Evidence

- In most plants, the roots soak up water and nutrients from the soil and then the stem moves the water up to the leaves.
- If a green plant is placed in a dark place for many days, their leaves will turn yellow and the plant will die, so green plant needs sunlight to survive.

♥ Note

You should mention enough and suitable evidence that support your claim.



- Plant roots absorb water and nutrients from the soil, then the stem transports them to the leaves through xylem.
- Plant leaves absorb carbon dioxide from air through stomata and absorb the sunlight through chlorophyll.
- During photosynthesis, green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water to produce glucose sugar (plant's food) and oxygen gas that all living organisms need to breathe.



Your scientific explanation should explain your claim and evidence introducing some supportive examples from what you have learned.

Digital Extension Activity

Activity 18 " Farmers Growing Plants: Irrigation " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

Activity 19 Review: Plant Needs

▶ We can summarize this concept in the following main points :

- Plants need water, air, sunlight and nutrients from soil as basic needs to live and grow.
- · Soil may not have been included as a basic plant need because :
 - Some plants only grow in the water.
 - Some plants grow on other plants instead of having roots in the soil.
- The seeds can grow without soil if they have water and Sun.
- Plants can grow without soil for a while, but finally they need soil.
- · Plants make their own food through the photosynthesis process.

Photosynthesis process

It is the process through which plants use the energy in sunlight to make their own food.

- · Green plants use their leaves to collect sunlight and carbon dioxide from the air.
- Light is important to plant growth, because plants use light to make their own food, so the plant without light does not grow well because it had less food.

· Functions of the plant roots:

- Roots fix the plant in the soil.
- Roots absorb water and nutrients from the soil, which are needed to make food of plants.
- Plant roots have hairlike feature called root hairs that increase the amount of absorbed water and nutrients that the plant needs.

· Functions of the plant stem :

- Stem transports water and nutrients to the rest of the plant through xylem.
- Stem supports leaves and flowers of the plant.

• There are many forms of stems :

- Some plants have a wood stem, such as tree trunks and shrubs.
- Most flowers have upright stems.
- Some plants have a climb stem, such as vines (grapes).
- Some stems extend underground and they are called tubers, such as potato plant.
- Some stems extend above and along the ground and they are called runners.

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· Function of the plant leaves :

Leaves make food for the plant through photosynthesis process.

- · Leaves need water, carbon dioxide gas and sunlight to make food.
- The air that the plant need moves into the leaves through tiny openings called stomata.

Stomata

They are pores on the surface of plant's leaves that allow gases to move into and out of the plant.

- · Leaves contain chlorophyll, which gives them their green color.
- · Chlorophyll captures energy from the sunlight.
- · There are two kinds of leaves:
 - Narrow leaves that look like needles, such as pine trees.
 - Flat, wide leaves.
- Photosynthesis is a process that takes place inside the leaves.
- During photosynthesis, green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water to produce :
 - Nutrients (such as sugars, starches, fats and proteins) that the plant needs to live.
 - Oxygen gas that animals and people need to breathe.
- As the photosynthesis process is completed inside the leaves, there are tubes called phloem that transport the food materials downward, from the leaves to the other parts of the plant.
- Water is transported through the xylem in the stem and move to the leaves through the smaller vessels of xylem that connect the stem to the leaves.
- The human circulatory system consists of the heart and blood vessels.

Circulatory system :

It is the system that transports blood and other fluids throughout the body.

 The following table shows the similarities and differences between the plant transport system and the human circulatory system:

Plant transport system

Human circulatory system

Similarities |

- Both have systems of vessels to transport water, nutrients and gases.
- Both have one-way vessels.

Differences j

- The transport system in plant is a system of tubes called xylem and phloem that transport different materials around the plant parts.
- Xylem tubes carry water and nutrients from the roots to the leaves.
- Phloem tubes carry sugars from the leaves to all plant parts.
- The transport system in human is the circulatory system that moves blood around the human body.
- Arteries carry blood that is rich with oxygen and nutrients from the heart to all body parts.
- Veins carry blood that contains carbon dioxide and is low in nutrients and oxygen from all body parts back to the heart.
- During photosynthesis process, light energy of the Sun is transformed into chemical energy that is found in glucose.
- During photosynthesis process, the plant also produces oxygen and water which are released into the air.
- Flowers are the reproductive parts of many plants.

Function of the plant's flowers:

Flowers produce seeds for the plant that help the plant to reproduce.

- When seeds receive air, water and the correct temperature, they can grow into a new plant.
- Seeds are transported from one place to another, this process is called seed dispersal.

Ways of seed dispersal in nature :

- 1. Floating on water of rivers or lakes.
- 2. Traveling by wind.
- 3. Sticking to animal fur or human clothes.
- 4. Being eaten by animals and comes out with their stool.

In the Assessment Book:

Try to answer:

- Self-Assessment (6)
- Model Exam on Concept (1.1)

Exercises on Lesson 6

Understand	OApply	Analyze	● Evaluate	● Creat
Chanca tha	correct answer :			
1. The move	ment of seeds from a p	lace to another is	called	
a. seeds (germination.	b. seeds disper	rsal.	
c. seeds r	eproduction.	d. seeds growth	٦.	
2. All the foll	owing can help in seed	dispersal, except	*******	
a. wind.		b. water.		
c. human	and animals.	d. soil and sunl	ight.	
3. Maple see	eds travel by wind beca	use they are		
1553	eds. b. spiny seeds.	8		eds.
	seeds have spines, so the			
a. float on		b. travel by win	d	
16	animal fur.	d. be eaten by		
5				
	ways of seeds dispersa			
a. burdocl		b. tomato seeds		
c. dandeli	on seeds.	d. coconut seed	ds.	
Choose from	n columns (B) what sui	ts it in column (A)):	
5113171=	(A)		(B)	ra lubra.
1. Coconut	seeds	a. sticking to an	imal fur.	
2. Maple se	eds and dandelion	b. floating on wa	ater.	
seeds		c. being eaten b	y animals.	
3. Burdock		d. traveling by w	vind.	
4. Tomato s	eeds and apple seeds	e. staying inside	flowers without	movemen
1	2	3	4	
Put (v') or (2	():			
	eds are formed inside the	ne flowers.		(
2. Seeds ae	rmination means the tra	nsportation of see	eds from one pla	ice
to another				1

-	There are many ways of seeds dispersal in nature.	()
	Coconut seeds can float on water.	()
4	5. Dandelion seeds have spines, so they stick to animal fur.	()
	6. Tomato seeds are light so they can disperse through air.	()
	7. Human could be one of the ways of seed dispersal.	()
4	Correct the underlined words :	
6	1. Coconut seeds disperse by wind.	()
	2. Burdock seeds are <u>light</u> seeds.	()
	3. Tomato and coconut seeds being eaten by animals and come out	
	with their stool.	()
5	Complete the following sentences :	7
	Some seeds can be transported from one place to another by floati as seeds or traveling by wind as seeds.	ng on water
	2. Burdock seeds can stick to animal fur because they have	
•	Maple seeds and dandelion seeds can travel by wind because they are	(
6	Give reasons for :	
•	Seeds dispersal may take place by animal in two different ways.	
	2. Seeds of maple or dandelion plants can disperse through wind eas	ily.
•	Burdock seed can stick to animal fur.	

Model Exam on Concept (1.1)

Total mark

20

narks

narks
)
)
,
,
,
)
)
,)

(A) Write the scien	ntific term of each of the follow	ving:	(5 mar
1. A liquid substan	ce that plants, animals and hum	an need to survive.	(
	nt that are responsible for repro		(
	nergy of plant to make photosyr		(
4. The plant that h	1 100 100 100 100 100 100 100 100 100 1	,	(
(B) Look at the following words below:	owing figures then complete th	e following sentend	es using t
	(Soil – figure A – fig	ure (B))	
1. The seeds in	grow faster than these in		
	B) should be transfered into		rowth.
Soil		TI AL PROPERTY I	
		工 未 工	
n		-(4	
	Figure (A)	Figure (B)	
(A) Choose from co	olumn (B) what suits it in colum	ın (A) :	(5 mari
(A)		(B)	
1. Roots	a. allow gases to come in an		
2. Stems	b. collect sunlight and carbon		combines
1			
3. Leaves	with water to help the plan	it to make its own fo	od.
J. Leaves	with water to help the plan c. absorb water and nutrients		od.
4. Stomata	c. absorb water and nutrients	s from the soil.	
		s from the soil.	
	c. absorb water and nutrients d. transport nutrients and wat	s from the soil. er from the roots to a	
	c. absorb water and nutrients d. transport nutrients and water of the plant. e. absorbs oxygen gas from the state of the plant.	s from the soil. er from the roots to a	all parts
4. Stomata 1	c. absorb water and nutrients d. transport nutrients and water of the plant. e. absorbs oxygen gas from the second seco	s from the soil. er from the roots to a	all parts
4. Stomata 1 (B) Correct the und	c. absorb water and nutrients d. transport nutrients and water of the plant. e. absorbs oxygen gas from the control of the plant. 2	s from the soil. er from the roots to a he soil 4	all parts
4. Stomata 1 (B) Correct the und	c. absorb water and nutrients d. transport nutrients and water of the plant. e. absorbs oxygen gas from the second seco	s from the soil. er from the roots to a he soil 4	all parts
4. Stomata 1 (B) Correct the und 1. Chlorophyll in plant	c. absorb water and nutrients d. transport nutrients and wate of the plant. e. absorbs oxygen gas from the 2	s from the soil. er from the roots to a he soil. 4 the sunlight.	all parts

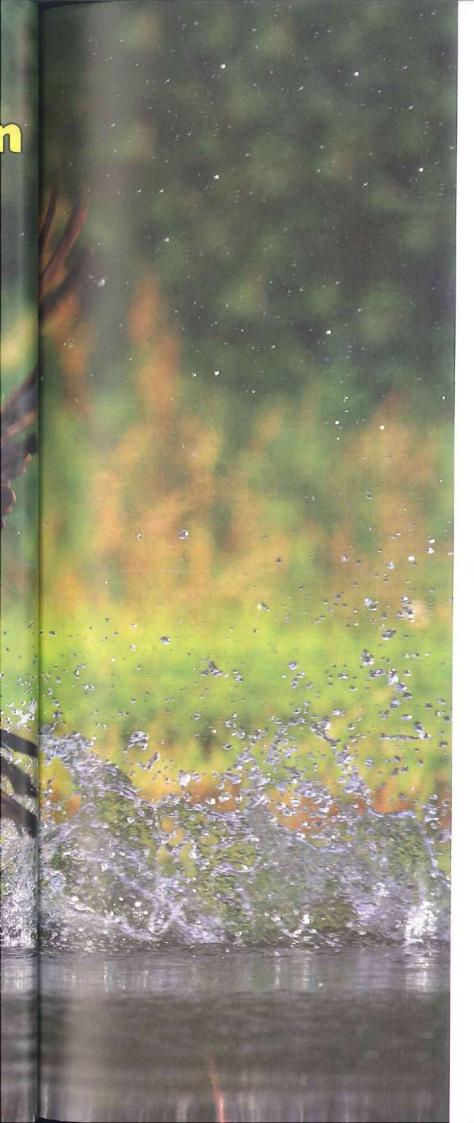
mark

arks)

arks)

Concept 1.2

Energy Flow in Ecosystems



Learning outcomes

By the end of this concept, your child will be able to:

- Develop a model to show how energy moves through an ecosystem.
- Create a model to explain the different roles that organisms play in an ecosystem.
- Explain how the health of each type of organism in an ecosystem impacts the overall health of the community.

Key vocabulary

- Consumers
- Cycle
- Decomposers
- Ecosystem
- Food chain
- Food web
- Interact
- Predators
- Prey
- Producers
- Scavengers

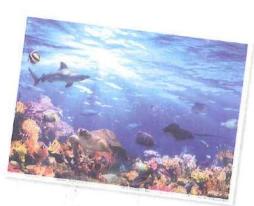
Notes For Parents On Concept [1.2]

Lessons	Activities	What you should do with your child
	Activity 1	Explain to your child how does energy flow through an ecosystem from plants to animals and between animals when they eat each other.
	Activity 2	Discuss with your child how hawk gets energy in an ecosystem.
	Activity 3	Digital extension activity.
1	Activity 4	Digital extension activity.
	Activity 5	Explain to your child how animals eat food according to what these animals bodies need to survive.
	Activity 6	Discuss with your child the Sun is the primary source of energy for all organisms on Earth to live and how different living organisms get energy.
1	Activity 7	Explain to your child living organisms can be classified into three groups according to their way of feeding.
2	Activity 8	Discuss with your child how the movement of energy and nutrients through an ecosystem can be represented using model known as a food chain.
	Activity 9	Let your child make a model of a food chain.
3	Activity 10	Explain to your child how all living organisms interact in food webs and we can draw these webs to show how organisms are connected within ecosystem.
4	Activity 11	Let your child make a model of a food web using animals' cards.
- Frach	Activity 12	Discuss with your child how the food web is a model that shows many interactions among living organisms in an ecosystem.
E	Activity 13	Digital extension activity.
5	Activity 14	Explain to your child how decomposers organisms make decomposition process
	Activity 15	Digital extension activity.
	Activity 16	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
6	Activity 17	Discuss with your child how restoration ecology is very important for plants and animals that help them have a stable environment to survive.
	Activity 18	Let your child review the main points in this concept.

1

Activity 1 Can You Explain?





The pictures above show different types of organisms and their environments: You probably know a lot about ecosystem which includes plants, animals and even humans are all part of ecosystem.

Ecosystem:

ms

he

It is an area (or community) that contains living organisms and nonliving things that interact with each other.

- The interaction between different components of an ecosystem depends on the flow of energy through these components.
- ▶ How does energy flow through an ecosystem ?

Energy flow (moves) through an ecosystem from plants to animals and between animals when they eat each other, then when living organisms die, their energy is returned to the soil.

- In this concept, we will study:
 - · What do animals eat.
 - Food is energy.
 - Food chains.
 - Food webs and their interactions.
 - · Producers, consumers and decomposers.

Activity 2 How Hawks Get Energy

▶ Look at the opposite picture, then put (√) or (*):

- 1. Hawk can feed on rabbits and rats. ()
- 2. Hawk can feed on plant leaves. ()
- 3. Hawk hunts its prey to get energy. ()



Hawks in ecosystem

- · Hawks get energy from food.
- Hawks generally eat different types of animals such as, snakes, mice, fish, birds, squirrels, rabbits and other small ground animals.
- Hawks do not eat plants, but they eat animals who eat plants, so they also depend on plants for energy.
- There are few predators that can attack hawks such as eagles or other hawks.





▶ What happens when the hawk dies?

When a hawk dies, it decomposes and its energy is returned to the soil.



Check your understanding

▶ Put (√) or (x):

- 1. Hawks generally eat plant.
- 2. Hawks get their energy from animals only.
- 3. When a hawk dies, its energy is returned to the soil.

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()

- ()
- ()



Digital Extension Activity

Activity 3 " All Animals Need Food to Survive " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.



Digital Extension Activity

Activity 4 "Decay " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

hawk	
hunt	

Activity 5

What Do You Already Know About Energy Flow in Ecosystems?

- An ecosystem is a community that provides food, water and shelter to all living organisms live in it.
- There are many different ecosystems on the Earth such as ocean, a rainforest, a desert or the tundra.
- Animals don't choose the food they eat according to its taste, but they eat food according to what these animals bodies need to survive such as:







Rabbit eats grass



Bird eats butterflies and worms

▶ Why animals eat plants or other animals?

Because animals need energy that comes from eating plants and other animals, as they cannot produce their own food.



There is a relationship between sunlight and the energy we get from our food, because the energy we get from food originally comes from the Sun.



Check your understanding

▶ Complete the following sentences using these words :

(Caracal - grass - Bird)

- 1. eats butterflies and worms.
- 2. Rabbit eats
- 3. eats mouse.

Activity 6 Food is Energy

- We need energy to do all activities in our daily life such as thinking, breathing and moving.
- There are some activities require a lot of energy such as hard work or doing physical exercises.
- · Our bodies still use some energy even when we sleep.



The primary source of energy

The Sun is the primary source of energy for all organisms on Earth to live, grow and carry out life processes.



▶ How different living organisms get energy?

Living organisms can either produce their own food such as plants or get food from other organisms such as animals including humans.

Plants

 Plants can make their own food through photosynthesis process by absorbing the sunlight through their leaves and use the sun's energy to convert water and carbon dioxide gas into glucose.

Animals

- Animals including humans cannot make their own food, but they get energy from the environment in which they live.
- · Different animals can get their food by :
 - Eating plants only.
 - Eating other animals that eat plants.
 - Eating both plants and animals.

From the previous explanation, we can conclude that :

The light energy of the Sun (radiant energy) is converted into chemical energy in plants during photosynthesis and then this energy is passed to animals and humans so, the main source of energy for all living organisms comes from the Sun.



Check your understanding

▶ Put (√) or (x):

- 1. Plants cannot make their own food.
- 2. The Sun is the primary source of energy for all organisms on the Earth. (
- There are some activities require a lot of energy such as hard work and sleep.

In the Assessment Book :

Try to answer:
Self-Assessment 7

primary source carry out radiant energy مصدر أولى تنفيذ طاقة إشعاعية

convert . chemical energy

يتحول طاقة كيميائية

Exercises on Lesson 1

Apply Understand Analyze Evaluate Create Choose the correct answer: 1. A community that includes living organisms and nonliving things is known as a. digestive system. b. respiratory system. c. ecosystem. d. vascular system. 2. The interaction that presents in an ecosystem occurs between plants and nonliving things only. animals and nonliving things only. c. animals and plants only. d. living organisms and nonliving things. 3. Living organisms that can absorb sunlight to make their own food are a. animals only. b. plants only. c. humans and plants. d. animals and plants. 4. Hawks get their energy from a. plants only. b. animals only. c. plants and animals. d. nonliving things. 5. Hawk eats a rabbit to get energy, this means that a. the hawk is a prey. the rabbit is a predator. c. the hawk is a predator. d. hawk and rabbit are predators. 6. All the following are considered as a source of energy for hawks, except a. snakes. b. birds. c. squirrels. d. seeds. 7. There is an energy flow between all the following two living organisms, except a. a lion and a deer. b. a tomato plant and a potato plant. c. a human and a fish. d. a predator and its prey. 8. Caracal obtains its energy by eating a. shark. c. mice. b. grass. d. butterfly. 9. Which one of the following living organisms can make its own food?..... a. Grass. b. A worm. c. A bird. d. A rodent. 10. We need more energy during a. watching TV. b. sleeping.

d. physical exercises.

om

ke

m

ans

c. listening to music.

the plant leaves to make glucose.

go to the soil.

3. After death living organisms, all energies that present in their bodies

)

1	4. Hawks cannot eat some types of food like plant leaves.	()
	 5. There is no energy flow between living organisms that live in seas and 	I	
	oceans.	()
	 6. Birds eat insects as a prey to get their energy. 	()
	 7. Dead organisms don't need energy. 	()
(8. There are some activities that don't need energy like listening to music). ()
	 9. We can live without moonlight, but we cannot live without sunlight. 	()
	 10. Butterfly can produce its own food from sunlight. 	()
	11. Hard works or severe physical exercises need a lot of energy.	()
1	Write the scientific term of each of the following:		
	1. A community that contains living organisms and nonliving things. ()
	2. The process that takes place inside plants through which we can		
)
4	3. It is a form of energy that changes into chemical energy during		
	photosynthesis process. (*******)
4	 4. It is the primary source of energy for all living organisms on the 		
	Earth. (•••••)
6	5. A type of living organisms that can produce its own food by		
		•••••)
6	6. The sugar that is formed inside plants during photosynthesis		
	and the state of t)
0	7. The gas that is present in air and necessary for the formation of		
)
	Living organisms that both humans and animals need to survive. (
	Survive. ()
5	Complete the following sentences :		
0	1. An area that provides food, water and shelter to all living organisms wh	nich liv	'e
	in it, is known as		
0	 All living organisms need to do their activities and to carry ou life processes. 	t their	
	3. Hawks attack rabbits to get their energy, while rabbits feed on	to ge	∍t
	their energy.	2250	
•	Sunlight energy converts and into glucose inside the leaves.	e plan	ıt

is

- 5. Both humans and animals cannot produce their own
- 6. The light energy that is produced from the passes through all living organisms on the Earth.

.....

.....

7. Plants produce and during photosynthesis process.

6 Give reasons for:

- 1. Human needs to eat some animals and plants.
- 2. Sunlight is important for all living organisms.

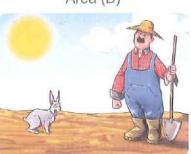
7 What happens if ...?

- 1. There is no sunlight reaches the Earth's surface.
- 2. A hawk is placed in an ecosystem that doesn't contain any living organisms except plants.
- 8 Study the following figures which show three different areas (A), (B) and (C), then complete the sentences below:

Area (A)



Area (B)



Area (C)



- 1. Areas (......) and (......) represent an ecosystem that contains two different living organisms, while area (......) represents an ecosystem that contains three different living organisms.
- 2. Photosynthesis process doesn't occur in area (......).
- 3. The sunlight energy is converted into chemical energy that is stored in the form of food in areas (..........) and (..........).
- 4. Energy flow can be occurred between animal and human in areas (..........) and (.........).

▶ Look at the opposite picture, then put (√) or (x):

- The energy that comes from food keep organisms alive.
- Energy flows between living organisms through an ecosystem.



Energy for life

- · All living organisms eat food to get the energy they need to survive.
- · Living organisms feed on one another, so energy passes between them.
- Living organisms can be classified into three groups according to their way of feeding, which are:
 - 1 Producers.
- (2) Consumers.
- 3 Decomposers.

1 Producers

 They are able to produce their own food in the form of glucose sugar which is rich with energy.

Producers:

They are organisms that can make their own food and don't consume (feed on) other plants or animals.

Example : Plants use energy from the Sun to produce their own food by photosynthesis process.



Nearly all of the producers on the Earth are plants.

2 Consumers

• They cannot produce their own food.

Consumers:

They are organisms that eat other living organisms to get their energy, because they cannot make their own food.

Examples: There are three types of consumers which are:

Primary consumers

- · They are animals that eat plants.
- Many insects are primary consumers.



Secondary consumers

- They are animals that eat the primary consumers.
- Birds are secondary consumers, because they eat insects and other organisms that eat plants.



Tertiary consumers

- They are animals that eat the secondary consumers.
- Tertiary consumers are often large meat-eating animals like crocodiles.



Decomposers

 They recycle nutrients back into the ecosystem through the process of decomposition of dead organisms.

Decomposers:

They are organisms that carry out the process of decomposition by breaking down or decaying dead organisms.

Examples: • Fungi, bacteria, worms and millipedes.



Worms and millipedes produce waste rich in nutrients that increase the soil fertility for plant growth.



millipede

- ▶ From the previous explanation, we can conclude that :
 - Energy flows through an ecosystem between living organisms.
 - The movement of energy and nutrients through an ecosystem can be represented using model known as a food chain.

primary consumers secondary consumers tertiary consumers fungi

كائنات مستهلكة أولية كائنات مستهلكة ثانوية كائنات مستهلكة ثالثية فطريات

recycle nutrients millipede decomposition

إعادة تدوير عناصر غذائية الدودة الألفية تحلل

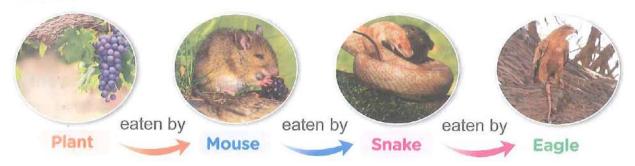
worms bacteria decaving fertility

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Food chain:

It is a model that shows one linear set of feeding relationships and movement of energy between living organisms.

Example:



From the above food chain, we can conclude that :

- The first link in the food chain is plant, which is considered as a producer living organism because it uses the energy from the Sun to produce its own food.
- The second link in the food chain is mouse, which is considered as a primary consumer living organism because it eats plant, then we found that the snake is considered as a secondary consumer living organism because it eats mouse, then we found that the eagle is considered as a tertiary consumer living organism because it eats snake.
- In the **final** when the eagle dies, it decomposes by decomposers and its energy is returned to the soil which makes the food chain continuity.



Check your understanding

Complete the following sentences using these words:

(Producers - Decomposers - Consumers)

- 1. ____recycle nutrients back to the ecosystem.
- 2. are living organisms cannot produce their own food.
- 3. ____ are able to make their own food in the form of glucose sugar which is rich with energy.

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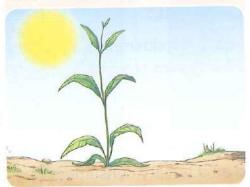
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Activity 8 Energy Flow

- As you know that all organisms need energy to do their activities and this energy flows through an ecosystem.
- There are organisms that cannot get energy directly from the Sun, so they obtain their needed energy by eating other living organisms.
- You also learned that food chain shows the food relationships (energy relationships) among organisms in different ecosystems.

Example of a food chain

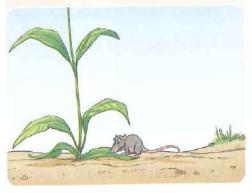
① A green plant makes its own food using energy from sunlight.



Then a snake eats the mouse to get energy.



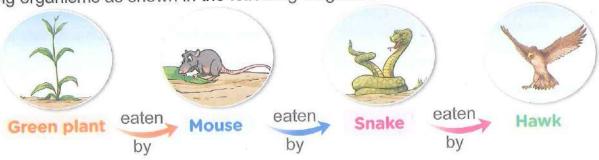
2 A mouse eats the green plant to get energy.



Then a hawk eats the snake to get energy.



So, we can form a food chain that shows the relationship among the previous living organisms as shown in the following diagram:



From the previous explanation, we can conclude that :

- The energy from the Sun passes to the green plant, then to the mouse and snake then finally to the hawk.
- Green plant can make its own food using the sunlight, while animals like mouse, snake and hawk cannot.

Predator and prey

In the previous food chain, we can observe that :

- The hawk and snake are "Predators", because they hunt other animals.
- The snake and the mouse are "Prey", because they are hunted by other animals for food.
- So, both predators and prey pass food and energy through the food chain.

Notes

- 1. Any animal that is hunted and eaten by another animal is called "Prey".
- 2. Any consumer that hunts and eats another animal is called "Predator".

Check

Check your understanding

▶ Put (√) or (x):

1. Any animal that is	hunted a	and eaten	by another	animal is	called predato	r.
-----------------------	----------	-----------	------------	-----------	----------------	----

	,	,
In any food chain, the plant is considered as a prey.	()

3.	The energy from the Su	passes to the mouse directly.	()

In the Assessment Book:

Try to answer:
Self-Assessment (8)

passes to

Exercises on Lesson 2

Apply Analyze Create Understand Evaluate 1 Choose the correct answer: 1. According to the way of feeding, living organisms are classified into a. two groups. b. three groups. c. four groups. d. five groups. 2. need energy to survive. a. Consumers only b. Decomposers only c. Consumers and decomposers only d. Producers, consumers and decomposers 3. Photosynthesis process produces a. glucose sugar in consumers.
 b. glucose sugar in producers. d. water in decomposers. c. water in consumers. 4. Which of the following living organisms can make their own food ? a Hawks. Mice. c. Pine trees. d Caracals. 5. Nearly all plants are considered as a. consumer organisms. b. nonliving things. decomposer organisms. d. producer organisms. 6. To obtain energy to survive, a. a producer eats a decomposer.
 b. a consumer eats a producer. d. a hawk eats a butterfly. c. a butterfly eats a hawk. 7. Living organisms that cannot make their own food are a. animals and plants. b. decomposers and producers. c. consumers and decomposers.
 d. consumers and producers. 8. Many insects are considered as b. decomposers. a. producers. d. secondary consumers. c. primary consumers. 9. The energy can flow directly a. from a plant to an eagle. b. from an ant to an eagle. d. from an eagle to a snake. c. from a snake to an eagle. 10. Which of the following food chains shows the correct way of energy flow through consumers?..... a. Secondary consumer ____ primary consumer ____ tertiary consumer. b. Primary consumer ____ secondary consumer ___ tertiary consumer. c. Tertiary consumer ____ secondary consumer ___ primary consumer. d. Secondary consumer ____ tertiary consumer ____ primary consumer.

	All the following organisms	are con	sumers, except	*****			
	a. deers. b. crocod	iles.	c. rabbits.	d. millipedes.			
•	12. Any food chain starts with	******					
	a. insects. b. plants.		c. fungi.	d. bacteria.			
	3. Decomposers always	the soi	I.				
	a. pollute b. damag	е	c. benefit	d. harm			
• 1	4. Waste materials produced	from mil	llipedes and worm	s are rich in			
a. water. b. nutrients. c. oxygen gas. d. carbon di							
• 1	5 are living organisms of the Sun.	that can	make their food d	irectly from the light of	ener	gy	
	a. Worms b. Grasse	s only	c. Trees only	d. Grasses and tree	es.		
• 1	6. Consumers and decompos						
	a. chemical energy from th						
	c. wind energy from the air		d. electrical energ	gy from a battery			
2	Choose from column (B) wha	t suits i	t in column (A):				
	(A)		(B)				
	1. Photosynthesis process	a. it pı	a. it produces nutrients which is important for soil				
	2. Respiration process	fert	fertility.				
	3. Decomposition process	b. it pr	b. it produces light which is important for plants.				
			c. it produces oxygen gas which is important for breathing.				
			roduces carbon di ortant for plants.	oxide gas which is			
		шр	ortant for plants.				
	1 2	AM .	3				
3	Put (🗸) or (X) :						
	 Producers don't need cons 	umers to	o survive.		()	
0	2. All living organisms don't n	eed ene	rgy to survive.		()	
•	Glucose sugar that is produ	ced by p	roducers has a lov	v amount of energy.	()	
• 1	 4. Some producers can live in hot sunny weather, but they cannot live in a completely dark room. 						
• !	5. Producers and consumers	use carb	oon dioxide gas fo	r making their food.	()	
	6. Birds are secondary consume				()	
	7. Eagle is a tertiary consume				()	
• (3. The first link in any food ch	ain is a d	consumer.		()	

ugh

Understand

Evaluate

Analyze

Create

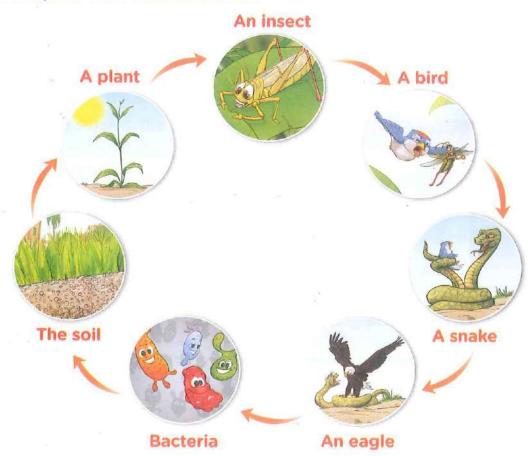
Form the following food chain by using the given words between brackets, then complete the sentences below:

a. This food chain doesn't contain consumer.

)

.....)

- b. The group of living organisms that is responsible for the final link of this food chain is
- c. Grasses change the energy of the Sun into energy during photosynthesis.
- 9 Study the following figure that shows the recycling nutrients back into the soil, then complete the sentences below:



- 1. Photosynthesis process is done by, so it is a producer.
- 2. Decomposition process is done by, so they are decomposers.
- 3. The insect is a consumer, because it eats the plant.
- 4. The large meat-eating animal is the
- 5. When the eagle dies, its nutrients return back to the soil with the help of

LESSON 3

Activity 9 Food Chain

 You have learned that food chain is a model that shows the flow of energy among living organisms in an ecosystem.

Now, let's make a model of a food chain.

▶ Complete the following food chain model using these words :

(Bird - Grass - Snake - Hawk)





Some living organisms obtain their needed energy by eating other living organisms.

Because they cannot get energy directly from the Sun.



▶ Look at the following food chain, then put (√) or (x):



Activity 10 Food Webs

- There are different types of foods you eat, imagine those foods are connected to you by lines in a web.
- All living organisms including you, interact in food webs and we can draw these webs to show how organisms are connected within ecosystem.

Food web:

ong

It is a model that shows many different feeding relationships among living organisms.



Interconnected food chains

- A food web is made up of several interconnected food chains, as we know food chains show the relationship of food and energy that passes from one organism to another, where:
 - As you have studied, the Sun provides energy for producers such as plants to make their own food during photosynthesis process.
 - Then, plants provide food for a series of consumers which may eat only plants or eat both plants and animals.
- So, the ways in which many food chains interact within an ecosystem form a food web.

Check your understanding

▶ Classify the following organisms in the table below :

(Hawks - Grasses - Insects - Trees - Crocodiles - Mice)

Producers	Predators	Prey

In the Assessment Book:

Try to answer: Self-Assessment 9

imagine connected

خنفس

ا يتصور interact متصل form خطوط interconnected شکل / تکوین مترابط

Exercises on Lesson 3

Understand Apply Analyze Evaluate @ Create Choose the correct answer: 1. All the following are types of food for primary consumers, except b. seeds. c. fruits. d. eagles. a. grasses. 2. Both animals and humans bodies a. can absorb sunlight to make their own food. b. cannot absorb sunlight to make their own food. c. breathe carbon dioxide gas. d. don't need water to drink. 3. A hawk can eat, when snakes are completely disappear from an ecosystem. b. grasshoppers c. birds d. leaves a. grasses 4. It is better for any predator to depend on to get its energy and survive. a. one species of consumers only b. many species of consumers c. one species of decomposers only d. many species of decomposers 5. All types of plants are similar in all the following characters, except they a. are able to make photosynthesis process. b. are eaten by primary consumers. c. can feed on predators. d. live in different types of ecosystems. 6. Human is a living organism. d. predator a. producer b. consumer c. decomposer 7. Secondary consumers can eat only

b. producers.

d. tertiary consumers.

a. decomposers.

c. primary consumers.

2	Put (✓) or (X) :				
0	1. Living organisms depend on each of	ther to get energy	у.	()
0	2. A hawk can get directly its needed e	nergy by eating l	peetles.	()
0	3. There are some consumers that can	eat both plants	and animals.	()
0	4. In a food chain, the energy can pass	s from a produce	to a nonliving thing		
	then to a primary consumer.			()
0	5. Hawks, crocodiles and sharks are pr	redators.		()
0	6. Human can eat plants and animals.			()
	7. Food web is the interconnected food	chains that show	ws many		
	different feeding relationships.			()
3	Complete the following sentences by	using the words	between brackets :		
•	(primary consumers – produ	ıcers – seconda	ry consumer)		
	1. In any food chain, plants are consider	ered as			
	2. If a frog eats an insect that feeds on	olants, this mean	s that the frog is a		
	3. Humans can eat producers and				
4	Study the following food web, then ch	noose the correct	t answer below :		_
•	butterflies				
	butternies				
	Grasses worms	birds	snakes		
	aracchanan				
	grasshopper	3			
	1. When disappear from this food	d web, birds are i	moving away to searc	h fo	r
	food in another ecosystem.				
	a. butterflies only	. worms only			
	c. grasshoppers only	l. primary consun	ners		
	2. Grasshoppers may die when there is	s no			
	a bissle h surders a	######################################	1 1 11 11		
	a. birds. b. snakes. c	grasses.	d. butterflies.		

4

Activity 11 Food Webs in the Neighborhood

▶ Look at the opposite picture, then put (√) or (x):

- Food web is made up of several interconnected food chains.

 (
- Food webs can be used to show how organisms that live in an area depend on each other for survival.



 You have learned that food web is a model shows many different feeding relationships among living organisms.

Now, You will design a model of a food web by using the following cards that show different types of living organisms.

Tools Living organisms cards.



Rabbit



Snake



Mouse



Green plant



Eagle

Step 1

Classify the animals in the pictures above according to the type of food that each animal eats.

Observation

You will find that:

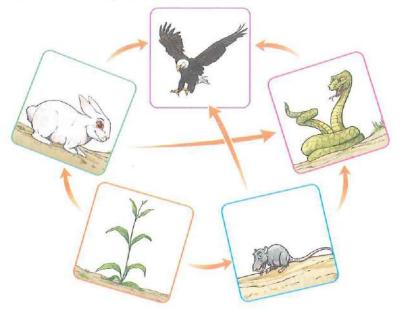
- The mouse and rabbit eat the green plant.
- The snake eats the mouse.
- The eagle eats the mouse, rabbit and snake.

Step 2

Draw a food web using arrows to show the suitable food for each animal.

Observation

According to the previous steps, we can draw the food web as follows:



Conclusion

Food web is a model that describes energy flow and feeding interactions between living organisms in an ecosystem.

Note

If an organism in an ecosystem disappears, the food web in this ecosystem will be affected, because some organisms lose their food source.

Check your understanding

-	Put ((V)	or	(x)	according	to the	previous	food web
			-	1			10.00.000	

 Snake is considered as a producer. 	()
2. Mouse can eat snake.	()
3. Green plant is a producer living organism.	()
4. Eagle is considered as a prey.	()

In the Assessment Book:

Try to answer:
Self-Assessment 10

describe affected

يصف بدأث interactions lose

تفاعلات

disappear source

يختفى

91

Exercises on Lesson 4

	Understand		O Apply	Analyze	Evaluate	Create	
1	Choose	the corre	ct answer:				
•	1. To ma	ike a food	web, you have	e to classify anima	lls in an ecosystem acc	ording	to
	their.	they	y get.				
	a. wa	ter	b. light	c. gases	d. food		
	2. Which	of the fol	llowing food ch	ains shows the co	rrect way of energy flov	v throu	gh
	living	organism	s?				
	a. Pro	ducer —	–⊳ predator —	→ primary consur	ner.		
	b. Pre	dator —	→ producer —	secondary con	sumer.		
	c. Pro	ducer —	→ primary con	sumer ——▶ preda	ator.		
	d. Pro	ducer —	→ secondary o	consumer ——▶ pr	edator.		
0	3. The p	redator in	a food web us	ually eats more th	an one type of		
	a. pro	ducers.	b. consumers	c. decompos	sers. d. plants.		
0	4. A sna	ke is a pre	edator for mice	, while snake is co	onsidered as a prey for		
	a. rab	bit.	b. frog.	c. eagle.	d. deer.		
	5. Rabb	its eat all 1	the following ty	pes of food, excep	<u>ot</u>		
	a. gra	isses.	b. carrots.	c. seeds.	d. insects.		
	6. If ther	e is no pri	imary consume	ers in an ecosyster	n, the producers will		
	a. inc	rease.	b. decrease.	c. die.	d. not be affected	١.	
2	Put (🗸)	or (X):					
0	1. The n	umber of	secondary cor	sumers will increa	ase if the number of		
	prima	ry consun	ners decreases	s in an ecosystem		()
0	2. It is d	ifficult to r	nake a food we	eb if we don't knov	v the type of food that		
	each	consume	r eats.			()
•	3. In a fo	ood chain	, the energy tra	insfers from eagle	s to mice.	()
0	4. In an	ecosyster	m that contains	rabbits, mice, ea	gles and snakes only,		
	if sna	kes disap	pear completel	y, so eagles will d	isappear completely.	()
•	5. The fe	ood web o	describes energ	gy flow and feedin	g interactions between	1020	
	living	organism	s in an ecosys	tem.		()

Complete the following sentences using the words below:

(primary consumers – food web – food)

- 1. We cannot make a food web, if we don't know the types of that the animals eat.
- 2. The interconnected food chains are known as
- 3. An eagle can eat rabbits and mice, which are considered as

Study the opposite food web, then choose the correct answer:

- 1. This food web starts with which are producers.
 - a. human
 - b. plant

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- c. animal (A)
- d. animal (B)
- 2. Human can get energy from
 - a. plant and animal (B).
- b. animal (A) only.

Animal

(B)

c. plant only.

- d. plant and animal (A).
- 3. Energy cannot flow directly from the producer to
 - a. human and animal (A).
- b. human and animal (B).

c. animal (B) only.

- d. animal (A) only.
- 4. The living organism that gets energy directly and indirectly from the producer, is
 - a. animal (A).
- b. animal (B).
- c. plant.
- d. human.

Plant

Animal

(A)

- 5.is considered as a primary and a secondary consumer at the same time.
 - a. Plant
- b. Human
- c. Animal (A)
- d. Animal (B)

Study the Following figure, then choose the correct answer below:



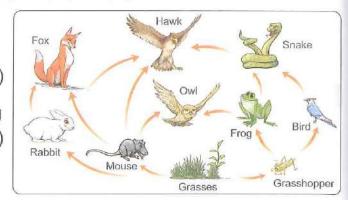
Which of the following, is necessary for survival of all living organisms?.....

- a. Plant.
- b. The Sun.
- c. Grasshopper. d. Snake.

LESSON 5

Activity 12 Interactions in food webs

- ▶ Look at the opposite picture, then put (√) or (x):
 - Food web is a model that shows many interactions among living organisms in an ecosystem. (
 - Food webs show interactions among many food chains. ()



- ▶ Food webs show that different organisms in an ecosystem are connected to allow energy to pass between them to survive, where :
 - Producers are eaten by some consumers.
 - Some consumers are eaten by other consumers.
 - Some consumers may eat the same producer or prey.

Give a reason for :

It is better to use a food web to show interactions among living organisms than a food chain.

Because a food web shows interactions among many food chains so, the food web contains many organisms, while a food chain shows interactions between just few organisms.



Check your understanding

▶ Put (√) or (x):

- Food webs show interactions between few organisms.
 (
- 2. Food chains show interactions between many food webs. ()

Digital E

Digital Extension Activity

Activity 13 "Decomposition" in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

Activity 14 What Are Decomposers?

- The opposite pictures show examples of decomposers which are bread mold fungus and mushroom fungus.
- These decomposers make one of the most important processes on the Earth which is called "decomposition process".





Bread mold fungus

Mushroom fungus

How does decomposition process occur?

· Decomposition process happens to all dead organisms as follows:

First

When animals and plants die, there are other animals called "scavengers" eat these dead organisms and break them down into smaller pieces.

Scavengers:

pper

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They are organisms that feed on the remains of dead animals and plants.

Examples of scavengers:



Hyenas





Crabs

Cockroaches



House flies

Second

Decomposers complete the process of decomposition by breaking down the smaller pieces of remains of dead plants and animals into nutrients that can be returned to the ecosystem so, plants can use these nutrients to make their own food.

Examples of decomposers:





Snails

Slugs





Earthworms

Fungi



Bacteria

decomposition nutrients fungus snails التحلل العناصر الغذائية فطر قواقع

bread mold mushroom scavengers remains عفن الخبز عيش الغراب الكائنات الكانسة

vultures hyenas slugs

نسور ضباع رخویات

Note

When nutrients consumed by plants, the cycle continues from producers (plants) to consumers then to decomposers again then back to the producers again.

Waste and dead organisms

1 Waste

- When you are finished using something like a food wrapper or a piece of paper you might throw it into a trash can.
- · Trash is taken to landfills with all the other trash.
- Humans produce a lot of waste, so landfills take up more and more space.



▶ How can humans reduce this waste?

- There are only one way that people use to reduce these waste materials and trash known as "Recycling".
- In recycling process people use the waste materials and make new products instead of going into a landfill.



2 Dead organisms

 When organisms die, decomposers undergo decomposition process to release nutrients back into the environment so, they can be used again.



Remains of animals and plants are decomposed and become part of the soil, which is used by plants to make their own food.



Notes

- 1. Decomposition process is considered as nature's recycling factory.
- 2. Decomposition process takes place on land and also underwater.

wast	Э
wrap	per
throw	,
trash	can

m	aterials
	ndergo
	lease



Check your understanding

	Put	1./1	nr	148	
100	Fut	V	Oi	(~)	

1. Scavengers are organisms that feed on the remains of other organisms.	()
2. Decomposers break down dead organisms into smaller pieces.	()
3. Hyenas and earthworms are examples of scavengers.	()
4. Decomposition process takes place on land and also underwater.	()



Digital Extension Activity

Activity (15) "Composting" in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

In the Assessment Book:

Try to answer:
Self-Assessment (11)

مواد يخض ينشر

Exercises on Lesson 5

Create

Apply Analyze Evaluate Understand Choose the correct answer : 1. Food web shows interactions between b. many nonliving things. a. few nonliving things. d. many living organisms. c. few living organisms. 2. In a food chain, there is a found between a producer and a secondary consumer. b. predator a. decomposer d. tertiary consumer c. primary consumer 3. The process which happens to all dead organisms is known as process. a. photosynthesis b. decomposition d. digestion c. breathing 4. In the decomposition process, the role of comes before the role of b. decomposers - scavengers. a. scavengers – decomposers. c. consumers – producers. d. predators – producers. 5. All the following living organisms are decomposers, except d. hyenas. b. bacteria. c. slugs. a. fungi. 6. The nutrients that resulted from decomposition and returned to the ecosystem can be used directly by d. decomposers. a. consumers. b. producers. c. predators. 7. Decomposition process occurs to a. dead animals and living plants. b. living animals and dead plants. d. living animals and plants. c. dead animals and plants. Choose from column (B) what suits it in column (A):

(A)	(B)
Photosynthesis process	a. it is a process in which the blood carry oxygen to all body parts.
2. Decomposition process	b. it is a process in which the nutrients are returned to the ecosystem.c. it is a process through which producers can make their own food.

1.

2.

	3	Put (V) or (X):		
		1. Food web shows interaction between many living organisms.	()
		2. Nutrients that present in living organisms bodies returned to the ecosyste	m	
		after death.	()
		Both of bread mold fungus and house fly are decomposers.	()
		4. Scavengers decompose dead plants and animals into nutrients that can		
		be returned to the ecosystem.	()
	0	5. Producers form their own food, while decomposers return nutrients back		
		to the ecosystem.	()
	0	6. At the beginning of decomposition process, decomposers break dead		
		organisms down into smaller pieces.	()
	1	7. Decomposers include mushroom fungus and slugs.	()
	0	8. Recycling of waste materials reduces pollution and the size of landfills.	()
	0	Both of bread mold and mushroom are two types of bacteria.	()
	4	Write the scientific term of each of the following:		
Ī		It is a process through which the nutrients found in dead organisms		
		bodies return back to the ecosystem.)
	•	2. They are organisms that feed on dead organisms bodies		,
		and break them down into smaller pieces. ()
	•	3. They are organisms that break down the remains of dead plants		- 10
		and animals into nutrients that return to the ecosystem. ()
	9	4. It is a process through which humans can make new products		
		from waste materials. (• • • • • • •)
	5	Complete the following sentences :		
		The interaction among many food chains is known as		
-		Decomposition process done by two types of living organisms, which are		
		organisms and organisms.		
	9	Nutrients that are resulted from decomposition process and returned back	to	
		the soil, can be consumed again by	. 10	
		4. Snails, earthworms and slugs are considered as, while vultures		
		crabs and cockroaches are considered as	2.5	
	,	5. Decomposition process takes place on land as well as under		
		6. Bread mold and mushroom are two types of		
		7. It is better to waste materials than throwing them in an ecosystem	m.	

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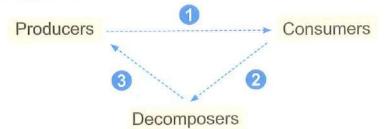
6	Give a	reason	for the	follov	wing :
---	--------	--------	---------	--------	--------

Scavengers must work on dead bodies before decomposers.

What happens if ...?

There is no decomposition process done on the Earth.

Study the following figure that shows the cycle of nutrients in an ecosystem, then put (\checkmark) or (x) below:



- Number 1 shows that nutrients transfer from producers to consumers.
- 2. Number 2 shows that nutrients transfer from consumers when they die to decomposers.
- 3. Number 3 refers to nutrients are returned back to the soil where producers can use them again.
- 4. There is a similarity between human as a consumer and snail as a decomposer, where both of them can do a recycling process.
- 5. Photosynthesis process in producers is considered as nature's recycling factory.
- 6. In the previous figure, when producers die we can draw an arrow directed from producers to decomposers.

The following figure shows an energy flow through a food chain:

Animal (A) Animal (B) Producer

Which of the following is correct about this food chain?

- a. Animal (A) is a predator.
 - b. Animal (A) is a secondary consumer.
- c. Animal (B) is a tertiary consumer.
 d. Animal (B) is a predator.

LESSON

6

Activity 16 Record Evidence like A Scientist

In this concept, you have learned a lot about energy flow through an ecosystem, food chains and food webs.
Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four
steps you have learned in concept one.
? Step 1 The Question
How does energy flow through an ecosystem ?
Step 2 My Claim
Step 3 My Evidence

Step 4 My Scientific Explanation

Activity T S T E M in Action

- Restoration ecology is very important for plants and animals that help them have a stable environment to survive.
- Plant ecologists are scientists who work on restoration projects and make experiments to provide data to make better restoration.
- In this activity, we will talk about Dr. Becky Barak who is a plant community ecologist.

Dr. Becky Barak

- She is a plant-community ecologist, where she studies groups of plants and she gets to do her research out on the prairie.
- She always loved plants and animals since here childhood, but she did not know that there was a science through which she can study plants and animals.



When she was a teenager, she started to learn about ecology, then she studied
a class in restoration ecology which means "rebuilding habitats that are damaged".

Seed Dispersal

- * Dr. Becky Barak has learned many interesting things such as :
 - Different plants need different ways to transport (disperse) their seeds.
 - There are plants with sticky seeds that stick to human clothes or an animal's body, so human or animal can carry these seeds to another place where seeds fall down.
 - Other plants have light seeds that are dispersed by wind, these seeds fly away to new habitats to grow in other places.

Careers in ecology

- If you are interested in the natural world, you can share in conservation or restoration work in your area to help take care of plants and animals.
- Your interest in nature now could lead to a career in ecology later in life.

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Check your understanding

▶ Put (√) or (x):

- 1. Dr. Becky Barak does her research in the lab.
- 2. Different plants need different ways to transport their seeds. (

research بحث disperse

)

Activity 18 Review: Energy Flow in Ecosystems

▶ We can summarize this concept in the following main points:

Ecosystem:

It is an area (or community) that contains living organisms and non-living things that interact with each other.

- An ecosystem is a community that provides food, water and shelter to all living organisms live in it.
- Energy flows through an ecosystem from plants to animals and between animals when they eat each other, then when living organisms die, their energy is returned to the soil.
- We need energy to do all activities in our daily life such as thinking, breathing and moving.
- The primary source of energy is the Sun for all organisms on the Earth to live, grow and carry out life processes.
- The light energy of the Sun (radiant energy) is converted into chemical energy in plants and then this energy is passed to animals and humans so, the main source of energy for all living organisms comes from the Sun.
- All living organisms eat food to get the energy they need to survive.
- Living organisms can be classified into three groups according to their way of feeding, which are:
 - 1 Producers: They are organisms that can make their own food and don't consume other plants or animals.
 - Consumers: They are organisms that eat other living organisms to get their energy, because they cannot make their own food.
 - 3 Decomposers: They are organisms that carry out the process of decomposition by breaking down or decaying dead organisms.
- The movement of energy and nutrients through an ecosystem can be represented using a model known as a food chain.

Food chain:

It is a model that shows one linear set of feeding relationships and movement of energy between living organisms.

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- The energy from the Sun passes to the grass, then to the mouse and snake then finally to the hawk.
- Grass can make its own food using the sunlight, while animals like mouse, snake and hawk cannot.
- Any animal that is hunted and eaten by another animal is called "Prey".
- Any consumer that hunts and eats another animal is called "Predator".

Food web:

It is a model that shows many different feeding relationships among living organisms.

- The ways in which many food chains interact within an ecosystem form a food web.
- It is better to use a food web to show interactions among living organisms than
 a food chain, because a food web shows interactions among many food chains
 so, the food web contains many organisms, while a food chain shows interactions
 between just few organisms.
- Decomposers are organisms which make one of the most important processes on the Earth which is called "decomposition process".
- Decomposition process happens to all dead organisms as follows:

First	Second
 When animals and plants die, there are other animals called "scavengers" eat these dead organisms and break them down into smaller pieces. 	 Decomposers complete the process of decomposition by breaking down the smaller pieces of remains of dead plants and animals into nutrients that can be returned to the ecosystem so, plants can use these nutrients to make their own food.

- There are only one way that people use to reduce these waste materials and trash known as "Recycling".
- In recycling process people use the waste materials and make new products instead of going into a landfill.

In the Assessment Book:

Try to answer:

- Self-Assessment (12)
- Model Exam on Concepts (1.1) & (1.2)

Exercises on Lesson 6

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	Understand	O Apply	Analyze	● Evaluate	• Cr	eate	
1	Choose the	correct answer :					
•	a. damagb. rebuildc. throwir	on ecology means ging the rebuilt habita ling habitats that are ng plastic products in ng plastic products in	ats. damaged. n seas.				
•	a. move ab. adaptec. decrea	on ecology helps an away to another eco to damaged ecosys se their number. se their number.	system.			9	
•	All the folial water.	llowing ways help pl		eir seeds, except dies. d. sunlight.			
•	habitat. a. air	th sticky seeds need	b. water	disperse and grow	in a nev	V	
•	5. Wind play a. small l	y an important role i ight b. big heavy	1100	seeds. d. floating			
2	Put (V) or ((x):					
	1. People a	nd engineers must s	share scientists in i	restoration ecology	у.	()
	2. Restorati	on ecology negative	ely affects human h	ealth.		()
		on projects must inc	clude restoring of s	helters, food and v	water	,	1
	resource			I		()
		need the same way	5		- d	()
	5. Both of s	mall light seeds and	big neavy seeds of	an disperse by wi	na.	()
3	Write the se	cientific term of eac	ch of the following	j :			
•		scientists who work environment for plan		jects to have	()
•		ns that use human c se their seeds to nev		odies or even wind	d ()
•	3. The suita	able ecosystem for p	lant-community ed	cologists to do thei	r ()

Model Exam on Concept (1.2)

Total mark

20

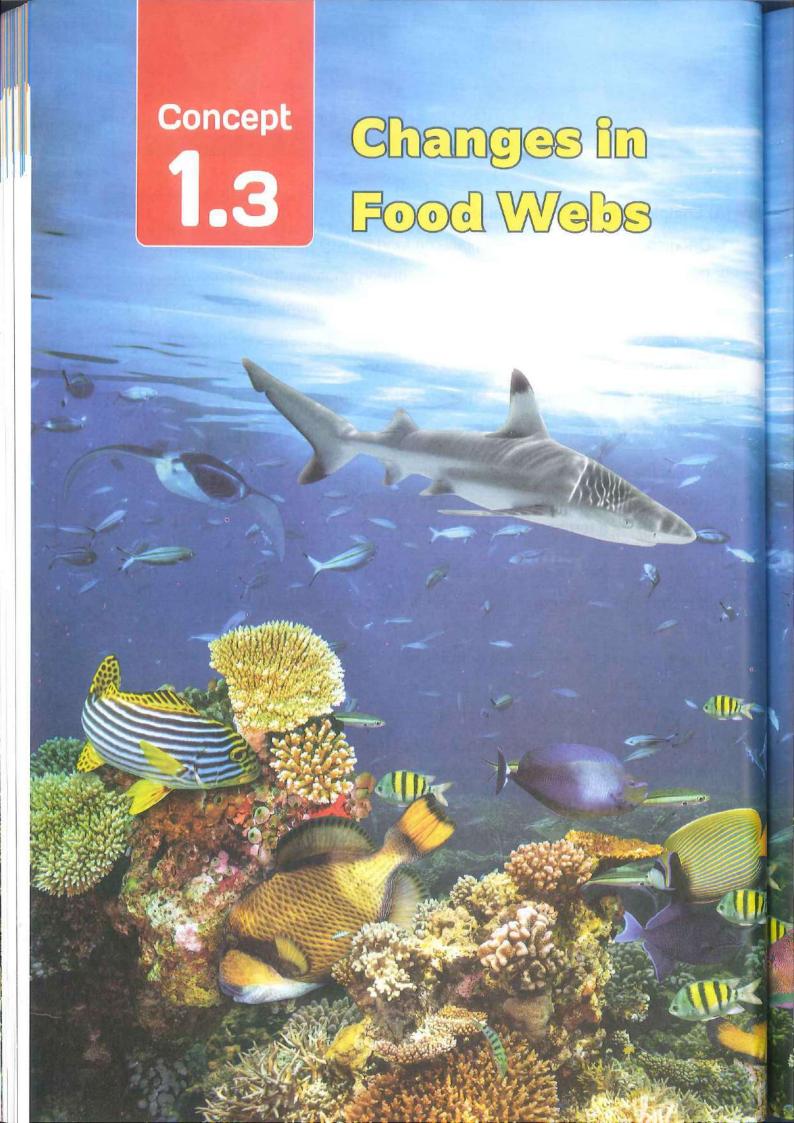
1	(A) Choose the correct answer:		(5 m	arks)
	 Hawk eats a rabbit to get energy, this hawk and rabbit are predators. the hawk is a prey. 			
	 3. All types of plants are similar in all the a. they are eaten by primary consume b. they are able to make photosynthes c. they live in different types of ecosys d. they can feed on predators. 4. If there are no predators in an ecosys a. not be affected. 	glucose sugar in the consumers. water in consumers. following characters, except ers. sis process. stems. tem, the other consumers will die. decrease		
2	(A) Put (V) or (X):		(5 ma	rks)
	1. All plants need the same way to dispe		()
	2. Dead organisms don't need energy.		()
	3. The first link in any food chain is a cor	nsumer.	()
	4. Hawks, crocodiles and sharks are con	nsidered as predators.	()
	(B) Give reasons for:			
	1. Desert ecosystem contains few members	pers of primary consumers.		
		* t	•••••	

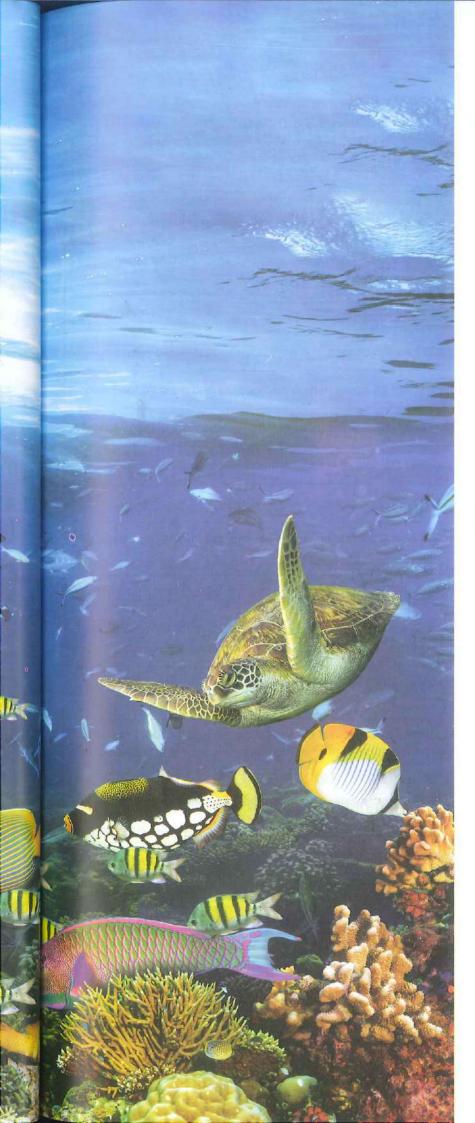
Scavengers must work on dead bodies before decomposers.	
(A) Complete the following sentences:	(5 mark
1. Decomposition process takes place on land as well as under	
2. Plants produce and during photosynthesis pro	cess.
In a food chain, the energy flows from consumer to a se consumer.	condary
4. Bread mould and mushroom are two types of	
(B) The following figure shows an energy flow through a food chair	n:
Producer Animal (A) Animal (B)	
Which of the following is correct about this food chain?	
a. Animal (A) is a predator. b. Animal (A) is a secondary co	onsumer.
c. Animal (B) is a tertiary consumer. d. Animal (B) is a predator.	
(A) Write the scientific term of each of the following :	(5 mark
 It is the primary source of energy for all living organisms on the Earth. 	(
2. It is a process through which humans can make new products	
from waste materials.	(
3. The animal that is eaten by another animal.	(
4. It is a model that shows one linear set of feeding relationships	
and energy flow between living organisms.	(
(B) Complete the following sentences by using the words between	brackets:
(primary consumers – producers – secondary consu	mer)
1. In any food chain, plants are considered as	
If a frog eats an insect that feeds on plants, this means that the from is a	og
3. Humans can eat producers and	

mark

narks)

arks)





Learning outcomes

By the end of this concept, your child will be able to:

- Demonstrate through modeling how changes in an ecosystem can disrupt a food web.
- Construct an explanation about how human activity can negatively impact an ecosystem.
- Argue for possible solutions to environmental problems that can restore the health of an ecosystem.

Key vocabulary

- Climate
- Conservation
- Nursery
- Pollution
- Habitat
- Population
- Microorganisms
- Restoration
- Microplastics

Notes For Parents On Concept [1.3]

Lessons	Activities	What you should do with your child
	Activity 1	Discuss with your child what might happen to a food web when an organism or the environment changes within an ecosystem.
1	Activity 2	Explain to your child how we can protect the marine environment in Palau island.
	Activity 3	Explain to your child how the change in ecosystem affects the food web.
	Activity 4	Let your child think about an ecosystem in his/her area and draw its food web.
2	Activity 5	Discuss with your child how the energy transfers from the prey to the predator.
_	Activity 6	Discuss with your child the flow of energy in the desert food web.
	Activity 7	Explain to your child how does pollution affect the food web.
3	Activity 8	Explain to your child how a population of one species affects the population of other species.
4	Activity 9	Explain to your child why healthy habitats are important to all organisms in the food web.
	Activity 10	Explain to your child the effect of plastic products on marine life.
5	Activity 11	Discuss with your child why coral reef is an important component of many marine food webs.
	Activity 12	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
6	Activity 13	Explain to your child how scientists, engineers and citizens work on habitat restoration.
	Activity 14	Let your child review the main points in this concept.

1

Activity 1 Can You Explain?



▶ What do you notice in the previous pictures?

- In picture (1), we notice that :
- The dried ground around the lake is due to the drought conditions.
- Evaporating water from the lake is due to the hot of the Sun.
- · In picture (2), we notice that :
- The sea is polluted due to throwing of plastic garbage of some ships into the sea.
- Ecosystems and food webs can be affected by many factors such as :
- Climate changes.
- **Note**

- Pollution.

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Human activities.

Pollution: It is the harms that happen to air, water or soil by substances that can harm living organisms.

What might happen to a food web when an organism or the environment changes within an ecosystem?

All organisms may be affected, where:

- If plants (producers) were disappeared from an ecosystem, the consumers will need to move to other places to search for food or they will die.
- If the number of one species of consumers in an ecosystem increases,
 the resources of food and shelter may disappear, so they will die.

In this concept, we will study:

- Protecting ecosystems.
- · Population changes.
- Habitat loss.

Plastic pollution.

Habitat restoration.

dried ground
food web
plastic garbage
substances

Activity 2 Protecting Ecosystems

▶ Look at the following pictures, then put (√) or (x):



 Overfishing affects the life of marine organisms.



Throwing plastic in seas affects the life of marine organisms. (

Human activities affect the marine habitats through :

- · Overfishing (when humans catch many fish from rivers, seas and oceans).
- · Water pollution (when humans throw waste materials in rivers, seas and oceans).

Protection the marine environment in Palau island

- On any island, we can observe that what is happening on land affects what is happening in the marine environment.
- · People in Palau uses different conservation programs to protect the marine environment and its resources by creating well-designed protected marine environment, where:



Palau island

- People in Palau control the human activities on land to keep the protected marine environment from pollution by avoid throwing waste materials in ocean.
- Fishers must not overfishing the coral reefs to conserve the marine environment.



Check your understanding

▶ Put (√) or (x):

- Water pollution cannot affect the marine habitats.
- 2. People in Palau must control the human activities on land to protect the marine habitat from pollution.

Activity 3 What Do You Already Know About How Food Webs Can Change?

- When an ecosystem changes, food webs change too, where :
 - Relationships between organisms in an ecosystem play an important role in keeping this ecosystem balanced.
 - When organisms are removed or their role in an ecosystem changes, this
 ecosystem could be destroyed (collapsed) and also food webs would change.

How does ecosystem change affect food webs?

What would happen if ?	Result	Reaso	on
There is a gentle rain in the desert	The desert ecosystem may be improved.	Because rainwater will feed the plants (producers) which will feed the organisms.	
There is a heavy rain in the desert	The desert ecosystem may be harmed.	Because the water of heavy rain will cause flooding which will destroy the ecosystem.	
There is a drought and all the grass dies	The food web in the ecosystem may be destroyed.	Because the plants will die and also the organisms will die.	
There are many top predators in the food web	The other organisms in the food web may be harmed.	Because the top predators will eat all the organisms.	



ns).

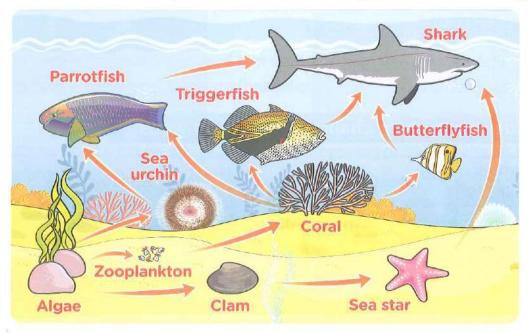
Top predators: They are predators (consumers) that exist at the top of food chains such as: Tigers, lions, sharks, crocodiles, etc. ...

relationships
gentle rain
heavy rain

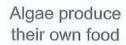
برامح

Food webs

- * You have known from the previous concept that the food web is a model shows different feeding relationships among living organisms.
- Look at this marine food web, then observe which organisms eat other organisms.



From the previous marine food web, we observe that :





The zooplankton, clam and sea urchin feed on the algae



- · The sea star feeds on the clam.
- · Coral feeds on the zooplankton



The shark feeds on the sea star and the three different fish.



- Butterflyfish and triggerfish feed on coral.
- · Parrotfish feeds on coral and sea urchin.



Check your understanding

▶ Choose :

- 1. When there is a gentle rain in the desert, the desert ecosystem may be
 - a. harmed.
- b. destroyed.
- c. improved.
- d. polluted.

- 2. Algae are considered
 - consumers. b. producers.
- c. decomposers. d. dead creatures.

algae triggerfish clam

طحالب سمكة الزناد الأصداف البحرية

parrotfish zooplankton feed on

السمكة الببغائية العوالق البحرية يتغذى على

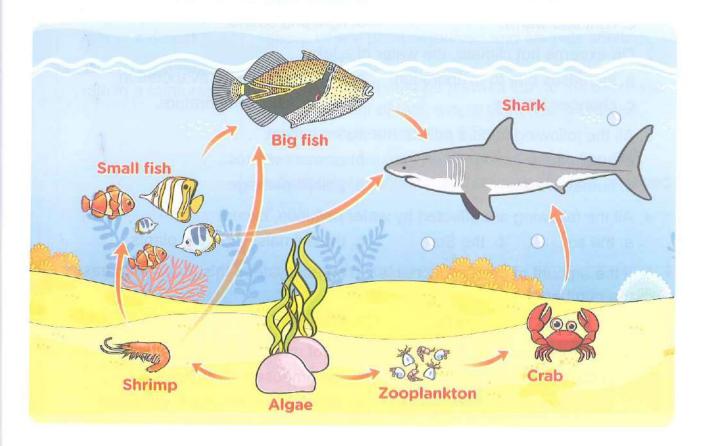
sea urchin butterflyfish

قنفذ البحر سمكة الفراشة

Activity 4 My Ecosystem

▶ Look at the following marine food web, then complete the diagram below using these words :

(zooplankton - crab - algae - shark - shrimp)



Theproduce their own food.	The	 Thefeeds on the zooplankton. The small fish and big fish feed on the 	The feeds on crab, small fish and big fish.
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In the Assessment Book :
Try to answer :
Self-Assessment 13

قنفذ ا سمكة

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Exercises on Lesson 1

Understand **OApply** Analyze Create Evaluate Choose the correct answer : 1. The Sun provides the Earth with b. warm only. a. light only. c. light and warm. d. light and sound. 2. On extreme hot climate, the water of a lake a. increases due to evaporation. b. decreases due to evaporation. c. changes into ice. d. has a lower temperature. 3. All the following factors pollute the water, except b. animals wastes. a. sunlight. d. plastic garbage. c. human wastes. 4. All the following are affected by water pollution, except a, the soil. b the Sun c. the animals. d. the plants. 5. If the amount of grasses increases in an ecosystem, this directly increases the number of d. lions. a. caracals. b. hawks. c. rabbits. 6. When the number of, the amount of grasses in an ecosystem increases. a. producers decreases
b. decomposers decreases c. primary consumers increases d. secondary consumers increases 7. Overfishing and throwing plastic garbage in the sea affect the survival of directly. a. desert organisms b. marine organisms d. rodents c. rainforest organisms 8. All the following are human activities that affect a marine ecosystem, except a. flooding. b. throwing human wastes. d. throwing plastic garbage. c. overfishing. 9. When there is a gentle rain in a desert ecosystem, this ecosystem may be a. harmed. b. improved. c. destroyed. d. collapsed. 10. All the following are top predators, except d. lions. a. hawks. c. butterflyfish. b. tigers. 11. The marine food web usually started with d. parrotfish. a. clam. c. zooplankton. b. algae.

a. triggerfish b. sh	arks c. sea urchin d. sea stars		
Choose from column (B)	what suits it in column (A):		
(A)	(B)		
1. There is a heavy rain in a desert.	a. this ecosystem may be improved due to melting of snow, where plant resources and animals shelters		_
2. There is a gentle rain in a rainforest.	appear again.b. this ecosystem may be harmed due to the decrease of the amount of rain, where plant resources and animals shelters may be affected.		
**************************************	 c. this ecosystem may be destroyed due to flooding where plant resources and animals shelters rem away. 		C
1	2		
Put (v) or (x):			
	oved from an ecosystem, the consumers will need		
to move away.	* *	(
2. Overfishing is one of t ecosystem.	he climate changes that affects the marine	(
3. What is happening on	land doesn't affect what is happening in marine		
ecosystem.		(
4. It is better to recycle the	ne waste materials than throwing them in rivers		
and seas.		(
5. Food webs don't change if their surrounding environments get changed.		(
6. If we introduce a new	predator to an ecosystem, this ecosystem will		
be affected.		(
7. If there is a heavy rain in a desert ecosystem, it will be harmed.		(
8. Zooplankton can make	e their own food by photosynthesis process.	(
	there are many top predators like sea star and	,	
sea urchin.		(
	omposers that present at the top of food chains.	(
Ecosystem can be effe	 Ecosystem can be effected by climate changes, pollution and human activities. 		

es.

4	Write the scientific term of each of the following:	
	 It is the harms that happen to air, water and soil due to human activities. 	()
	A human activity that leads to decreasing the number of fish and affecting many marine food webs.	()
	3. They are consumers that exist at the top of food chains.	()
1	Complete the following sentences :	
9	Throwing plastic garbage and waste materials into a river cause was	ater
	If producers increase in an ecosystem, the number of primary constitutions.	sumers will
•	The human activity that doesn't pollute water but decreases the numerine organisms is known as	ımber of
4	4. Heavy rain causes which destroys desert ecosystems.	
	5. The consumers that exist at the top of any food chain are called	************
6	Give reasons for:	
0	 When the number of one species of consumers in an ecosystem in they will die. 	
	2. Death of algae may leads to moving sharks away to another place	s.
7	What happens if ?	
•	Throwing big amounts of plastic garbage and waste materials in w	ater.
	A small lake is exposed to extreme hot climate for several months	
	3. The number of secondary consumers in an ecosystem decreases.	

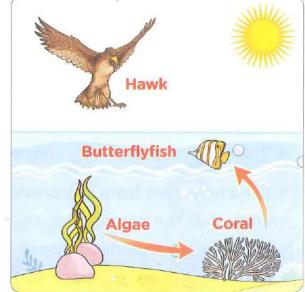
8 Study the following food chain in an ecosystem, then complete the table below:



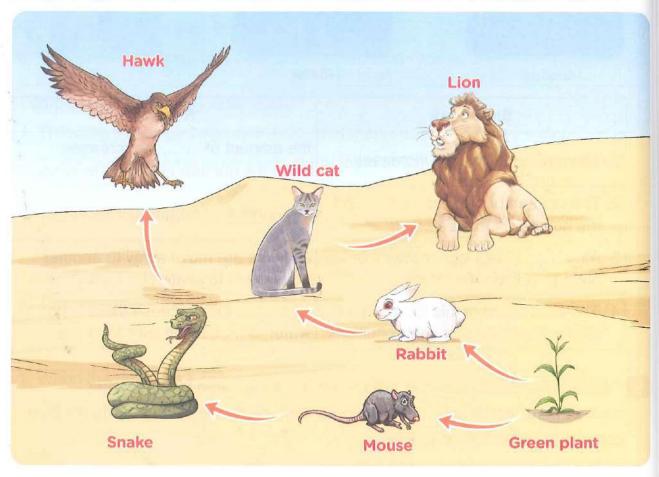
Situations	Results
1. The number of rabbits increases	the amount of decreases, while the number of increases.
2. The amount of grasses and the number of foxes	the number of rabbits increases.
All disappear or their role change in this food chain.	all foxes are move away to another ecosystem to search for food.
 The ecosystem of this food chain is affected by severe drought conditions. 	all die, because there is no water to make their own food.

9 "What is happening on land affects what is happening in the marine environment" According to the previous fact, study the following figure then complete the sentences below:

- 1. The living organism that can make photosynthesis process is
- Energy can flow from marine
 environment to land, when the hawk
 eats
- If many sharks are present in this ecosystem, will moved to another ecosystem to search for food.



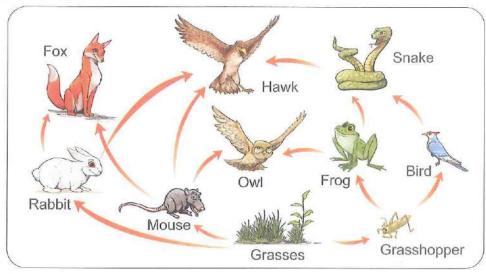
▶ Look at the following food web, then complete the sentences below :



- 1. The _____ represent the producers.
- 2. The _____ and ___ represent primary consumers.
- 3. The _____ and ____ represent secondary consumers.
- 4. The and represent tertiary consumers.
- You have known from the previous concept that the Sun produces energy that the plants take, then this energy transfers to consumers that when they die, the decomposers convert them into simple substances and return the energy back to the soil.
 - Now, we are going to do an activity to make a model that shows the flow of energy through a food web.

Tools

A picture of a food web.



Cards labeled with organisms.



• Paper squares (represent the flow of energy in an ecosystem).



Steps

- Choose some of your friends to play with them a game of predator-prey tag.
- Observe the picture of the food web carefully with your friends.
- Give each one of your friends a card labeled with an organism from the above food web and a paper square.



الكائنار مواد ب

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4. Start the game with your friends. If one of your friends becomes a prey to another friend which is a predator, so the prey gives his paper square to the predator.



Observation

When a predator feeds on a prey, it gains energy, so the energy transfers from the prey to the predator.

Conclusion

The energy in the overall system remains as the same, where:

- 10 % only of this energy transfers between living organisms when an organism feeds on the other.
- 90 % of this energy is left to the decomposers which return this energy back to the soil.



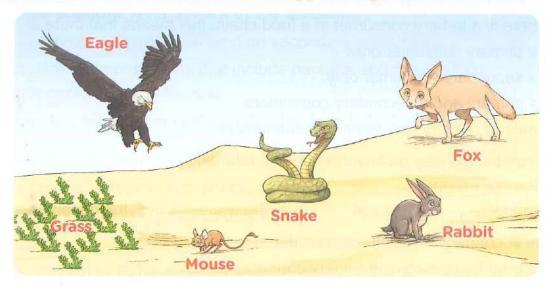
Check your understanding

Dest	1.1	0.0	1 ws	
Pul	(~)	or	(x)	

- In a food web, the energy transfers when a prey gains energy from the predator.
- 2. 90 % of the energy in a food web transfers between living organisms when an organism feeds on the other.()

Activity 6 Desert Food Web

Look at this desert food web, then use the table below to draw the arrows that show the flow of energy through this food web:



Number of arrows	Direction of arrows
1 (2 blue arrows)	Comes out of grass
(1 green arrow)	Goes to the snake
1 1 (3 red arrows)	Goes to the fox
↑↑↑ (3 black arrows)	Goes to the eagle

What would happen ...

other

- 1. To the rabbits (hares) if all the grass were removed from the previous food web.

 Rabbits would not find any type of food, therefore they would die.
- 2. To the eagles if all the grass were removed from the previous food web. At first, the eagles would not be affected but when the rabbits die, the eagles would have less food.

Check your understanding

According to the previous food web, complete this sentence using these words:

(energy - rabbits - grass - eagles)

Rabbits feed on (consume) the _____, so the energy travels to the _____, then the eagles feed on the rabbits and the _____ travels to the _____,

desert food web arrows

eagle

تبقى

direction شبكة غذائية صحراوية hare أسهم اتجاه أرنبة In the Assessment Book : Try to answer : Self-Assessment (14)

Exercises on Lesson 2

Analyze

Evaluate

Create

Apply

Understand

1	Choose the correct answer :				
•	 If there is a tertiary consumer in a food chain, this means that there is				
•	Decomposers play an important role in returning the energy back to all the following, except a. the air. b. the soil. c. the water. d. the decomposer.				
•	3. The secondary consumer is considered as				
•	 4. In a food chain, the energy transfer a. from a predator to a prey. b. from a prey to a predator. c. from a predator to a producer. d. from a consumer to a producer. 				
•	5. The amount of energy that transfers between living organisms in a food web, is a. 10 % b. 90 % c. 30 % d. 100 %				
•	If all grasses were removed completely from an ecosystem, rabbits in this ecosystem will a. increase. b. decrease. c. die. d. not be affected.				
•	 7. It is better for a predator in a food web, to have				
2	Put (/) or (X):				
•	Most of living organisms are prey for some animals and also predators for others at the same time. (
0	2. The Sun produces energy that decomposers use to make their food. (
0	The soil fertility depends on decomposers.				

	4. Any food chain can be formed of producers only.	()
	 5. Energy transfers when a prey loses energy to the predator which feed 	ds on it. ()
	6. A desert food chain doesn't contain any type of fish or sharks.	()
	Write the scientific term of each of the following :		
	1. They are consumers which feed on secondary consumers.	()
-	They are living organisms that include bacteria and fungi, which		20
	return energy back to the soil.	()
•	 3. It transfers between animals in a food web, to help them do their activities and survive. 	1	١
	activities and survive.	()
4	Complete the following sentences:		
6	1. Predators of living organisms may be for other living organisms.	anisms.	
	Secondary consumers feed on consumers.		
9	 3. All energy in all living organisms return back to the environment by organisms. 	the help of	
0	4. A predator get from the prey which feeds on.		
•	Study the following figures, then put (v') or (x): Figure (A) Figure (B) Figure	re (C)	
	1. All living organisms in figures (A) and (B) can make their own food	by	
	photosynthesis process.	()
	2. Some marine organisms are present in figure (B).	()
	3. Top predators are found only in figure (A).	()
	4. All animals in figure (A) can find a prey in figure (B), except shark.	()
	5. To form a food chain, you have to rearrange the previous figures as	s follows :	
	Figure (C) then Figure (B) figure (A).	()

te

LESSON

▶ Look at the following pictures, then put (√) or (x):



 Living organisms in forests are not affected by burning of forests.



2 Marine organisms are negatively affected by leakage of oil into the water.

Does pollution affect the food webs?

Pollution affects the food webs when food resources and habitats of living organisms in these food webs are polluted which may lead to the death of these organisms.

- Imagine that there is a fire in a forest, you will notice the following things :
 - · Smoke and ash are spread allover the forest and cover the grasses.
 - Animals may have difficulty breathing.

So, pollution affects a food web, where if an animal is exposed to pollution and dies, it affects all other levels of the food web.



Check your understanding

▶ Put (√) or (x):

- 1. Food webs, food resources and habitats of living organisms are negatively affected by pollution. (
- 2. Smoke and ash are not negatively affect plants and animals. ()
- 3. Fire in forests produce smoke that causes difficulty breathing for animals.

forests smoke spread غابات marine organisms دخان ash

levels

ينتشر

leakage کائنات بحریة difficulty breathing مستویات

تسرب صعوبة في التنفس

Activity 8 Population Changes

- ▶ There are many factors affect the ecosystem such as :
 - · Increasing or decreasing the amount of water.
 - · Increasing or decreasing the temperature.
 - Climate change.
- ▶ These factors cause problems for many living organisms, where :
 - If the climate change is suitable, the population of a species increases but if it is unsuitable, the population of a species decreases, so organisms would either die or move to another place.

Population:

It is the number of organisms of one type of species living in an area.

- In an ecosystem, all species depend on other species for survival, so an increase or decrease in one species affect the population of other species causing a population change.
- Now, let's study an example shows how a population of one species affects the population of other species.

Seabirds

gs:

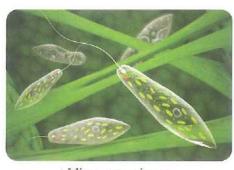
- They build their nests on the top of mountain cliffs.
- They dive deep down into the sea to feed on small fish which are the main source of food for many seabirds.
- The small fish feed on **microorganisms** that float on the surface of the sea.



Seabird

Microorganisms

- They are organisms that are too small for people to see with only their eyes.
- They can make their own food, so they are the producers in the marine food web.
- They are found in cold water habitats, because they need this water to survive.



Microorganisms

صعوبا

▶ What will happen to microorganisms if the climate is changed and the water become warm?

Microorganisms will move toward an area where the water is cooler



Then, the small fish that feed on these microorganisms will also move to a new habitat



Therefore, when seabirds will not have a food source, some of them will move to a new habitat, while others will die.



Check your understanding

- ► Complete the following sentences using these words : (microorganisms – population – cold – seabirds)
 - 1. The ______ feed on the small fish which feed on _____ that float on the surface of the sea.
 - 2. The number of organisms of one type of species living in an area is known as
 - 3. Microorganisms are found in water habitats.

In the Assessment Book:

Try to answer: Self-Assessment (15)

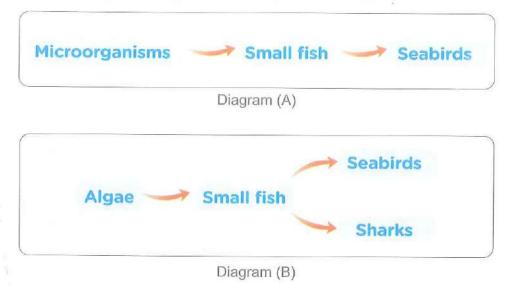
C

Exercises on Lesson 3

Understand **OApply** Analyze Evaluate Create Choose the correct answer: 1. Leakage of oil into seawater negatively affects the a. desert organisms. b. marine organisms. c. forest organisms. d. rivers organisms. 2. Fire in forest produces a. smoke only. b. ash only. c. smoke and ash. d. oxygen and ash. 3. Pollutants produced from a forest fire harm all the following, except a. air. b. respiratory system. c. grasses. d. sunlight. 4. As a result of pollution in an ecosystem, the number of living organisms a. decreases. b. increases. c. doesn't change. d. is doubled. 5. Any increase or decrease in the number of organisms of one type of species is known as a. an ecosystem. b. adaptation. c. a climate change. d. a population change. 6. If the climate change is suitable, the population of a species a. will die. b. will not be affected. c. will increase. d. will decrease. 7. Seabirds build their nests a. on the water surface. b. on the top of mountain cliffs. c. deep down into the sea. d. deep down into the river. 8. All the following statments are correct, except a. small fish can eat seabirds. b. sharks can eat small fish. c. small fish cannot eat seabirds. d. seabirds cannot eat sharks. 9. The suitable habitat for microorganisms to survive is a. hot water. b. warm water. c. cold water. d. boiled water. Put (v) or (x): Forest fire negatively affects the marine organisms. 2. Pollution affects both of food resources and animal habitats. Forest fire produces smoke only that covers the grasses.)

The seawater becomes warm.

7 Study the following two diagrams, then put (\checkmark) or (x):



- 1. Both diagrams (A) and (B) show two food webs.
- 2. In diagram (B), both of seabirds and sharks are secondary consumers. (
- In diagram (A), if small fish are removed, the seabirds are negatively affected.
- 4. There is a food relationship between seabirds and sharks, where each of them can eat the other.
- In diagram (B) if sharks are removed, the seabirds population may be decreased.

Look at the following figures, then complete:







Figure (2)

- 1. Figure _____ represents dead coral reefs due to rising of water temperature.
- 2. Figure represents healthy coral reefs.

▶ Why are healthy habitats important to all organisms in a food web?

- · Because they provide organisms with resources that they need to survive as air, food, water and shelter, so if each species gets its needs to survive, there will always be enough food for each organism in the food web.
- When these habitats are destroyed, different organisms may not be able to survive and this will negatively affect the flow of energy in the food web.

Notes

- From human activities that change the habitats in an ecosystem are :
 - building up more buildings and roads.
 - Throwing waste materials in water.
 - overfishing in seas and oceans.
- 2. Human activities can also impact the weather and nonliving factors in an ecosystem, such as the temperature of ocean water.
- 3. All of these changes can cause habitat loss which is one of the main causes of extinction.
- Now, we will study an example of habitat loss in a coral reef system.

Coral reefs

- They are some of the most diverse and valuable ecosystems on Earth.
- They provide food and shelter for large numbers of fish and other marine organisms.
- They are important for tourism, where people travel to coral reefs for fishing or diving. This help increase the visitors and income of local hotels, restaurants and other business.





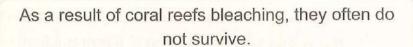
Coral bleaching

Coral reefs bleaching happens when the water temperature rises, where:

When the water is very warm, coral reefs will get rid of the algae living in their tissues.



This causes the coral reefs turn completely into white.





Coral bleaching

Impact of coral bleaching

Destroying of coral reefs due to coral bleaching as a result of rising of water temperature has negative effects on many communities as :

· Coral and fish communities :

Fish and other marine organisms that depend on coral reefs for food and shelter may die or move to another habitat.

Human communities:

People that depend on coral reefs and fish for food will be negatively affected.

diverse income

business

دخل / إيراد شركات

تنوع

valuable visitors

get rid of communities ابيضاض الشعاب المرجانية communities ذو قيمة الزائرين

يتخلص من

مجتمعات

tourism local hotels tissues

negative effects

السياحة الفنادق المحلية أثار سلبية

133

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-12	
-0	١

Check your understanding

Put	1.1	OF	141	
- ul	(1)	U	(~)	

1. Coral reefs bleaching happens when the temperature of seawater		
decreases.	()
2. Coral reefs bleaching negatively affects the coral, fish and human		
communities.	()
3. From human activities that change the habitats in an ecosystem is		
overfishing in seas.	()
4. Habitat loss is not considered from causes of extinction.	()

Activity 10 Plastic Pollution

- You have learned from the previous lessons that human activities may negatively affect (impact) the environment as the impact of throwing plastics in the marine environments (as seas).
- Where, seas are habitats for a large number of organisms, these organisms don't find anything to feed on except plastic waste thrown in seas.



 When the amount of plastic increases in the sea, the number of marine organisms decreases, so marine food webs will be affected, leading to a breakdown in the flow of energy.

The effect of plastic products on marine life

Plastics in the sea affect marine life, where whales, sea turtles, seabirds and fish cannot often differentiate between real food and plastic.

Examples:

1 How do sea turtles get harmed by feeding on plastic?

- Sea turtles cannot differentiate between a jellyfish and a piece of plastic in the water.
- Therefore, sea turtles eat a lot of plastic thinking that it is jellyfish, so sea turtles get harmed.



2 How do coral reefs get harmed by feeding on plastic?

- Due to the effect of UV rays coming from sunlight, plastic products get broken down into smaller pieces called microplastics (smaller than a grain of rice).
- When coral reefs filter the seawater to get their food, they ingest these microplastics that are as small as the pieces of food that coral reefs get from the water, so coral reefs get harmed.



Notes

- About 8 million tons of plastic are thrown into the marine environment every year, most of them come from land.
- 2. Plastics are very harmful to marine organisms because they are toxic and sharp.
- 3. People can recycle the plastic products instead of throwing them in the sea.



Check your understanding

Complete the following sentence using these words:

(UV – Sun – products – microplastics)

Plastic get broken down into smaller pieces called due to the effect of rays coming from the

▶ Put (√) or (x):

- When the amount of plastic increases in the sea, the number of marine organisms increases.
- 2. Plastics are very harmful to marine organisms as they are toxic and sharp.

 ()

In the Assessment Book:

Try to answer : Self-Assessment 16

Exercises on Lesson 4

• Und	lerstand	Apply	Analyze	● Evaluate	Crea		
1 C	hoose the correc	ct answer:					
1.	1. Healthy marine environment is important for survival of						
	a. humans.	b. lions.	c. fish.	d. deers.			
• 2.	All the following	are healthy resou	rces for marine fo	od webs, except.			
	a. clean water a	and food.	b. clean food an	d shelter.			
	c. clean shelter	and water.	d. polluted water	r, food and shelter	ſ.		
• 3.	their food webs			De 16	ms in		
	a. increased.	b. decreased.	c. not changed.	d. doubled.			
• 4.	All the following	may occur due to	habitat loss, exce	<u>pt</u>			
	a. increasing of	population.	b. decreasing of	population.			
	c. extinction of s	some organisms.	d. decreasing of	resources.	**		
• 5.	Coral reefs are	considered as					
	a. living organis	ms.	b. bacteria.				
	c. ecosystems.		d. fungi.				
• 6.	When water ten	nperature increase	es, algae leave tiss	sues of, so	they		
	a. seabirds	b. coral reefs	c. clam	d. sharks			
. 7	As a result of co	ral reefs bleaching	r they will be				
	a. increased.	b. enlarged.	c. survived.	d. died.			
. 0							
0.	except	aterials cause all t	ne following to the	e manne environin	ient,		
		food webs.	b. pollution of wa	ator			
		population.	The state of the s				
0							
• 9.		es and are p			ain.		
	a. deers		c. eagles	d. tigers			
• 10.	When coral reef	s the seawa	iter, they may inge	est microplastics.			
	a. evaporate	b. filter	c. cool	d. warm			
• 11.	Coral reefs are r	negatively affected	by				
	a. rising water to	emperature only.					
	b. ingesting mici	roplastics only.					
	c. Both of rising	temperature and i	ngesting micropla	stics.			
	d neither rising	of temperature no	r ingesting micron	lactics			

Unit 1 | Concept

Understand

		4 5		2 100	
May 100	Put	1./	02	100	
17 40	rut	W	OF	Λ	
March 200		1	F (7.0)		

	1.	Healthy habitats provide living organisms with clean air, healthy food and water.	()
9	2.	The flow of energy in food webs is not affected when the natural habitats are destroyed.	()
•	3.	Human activities impact the nonliving things in an ecosystem.	()
•		Healthy coral reefs have no benefit to fish but they are important for tourism.	()
•	5.	When the temperature of seawater decreases, coral reefs receive more algae.	()
•	6.	Coral bleaching occurs as a result of throwing plastic in seawater.	()
	7.	Living organisms in seas and oceans cannot differentiate between real food and plastic waste materials.	()
	8.	Jellyfish can get its energy by eating the sea turtle.	()
	9.	UV rays coming from the Sun, break down plastic wastes into microplastics.	()
	10.	Coral reefs filter the seawater to get their needed food.	()
3	W	rite the scientific term of each of the following:		
	1.	It is a condition in which coral reefs turn completely into white. ()
0	2.	They are rays coming from the Sun that break down plastic products into microplastics. ()
0	3.	Small pieces of plastics in the size of rice grains and they cause harms to marine organisms.)
•	4.	It is a process that people can do for plastic waste materials instead of throwing them in seas and oceans. ()
4	C	omplete the following sentences using these words:		
•		(extinction – overfishing – shelter – toxic – predator)		
	1.	Healthy natural resources include clean air, healthy food, water and suitable		
	2.	The human activity that directly decreases the marine population is		

3. Habitat loss is not only decrease marine population but also it is one of the

4. When a sea turtle eats a jellyfish, this means that the sea turtle is a

main causes of

living organism.

	Plastic waste materials are very harmful to marine organisms, because are and sharp.	they	
5	Give reasons for:		
	Coral reefs are important for human communities.		
	2. Coral bleaching happens when the water temperature rises.	***********	
	 Both of rising water temperature and ingesting microplastics are harmfu coral reefs. 	ıl for	
	······································	*********	
6	Study the following figures, then put (\checkmark) or (x) :		
•	Plastic products Sea turtle Jellyfish		
	in water		
	1. We can draw arrows between plastic products, jellyfish and sea turtle to	desiç	gn
	a food chain.	()
	2. The sea turtle can differentiate between plastic and jellyfish.	()
	3. Both of jellyfish and sea turtle are consumers.	()

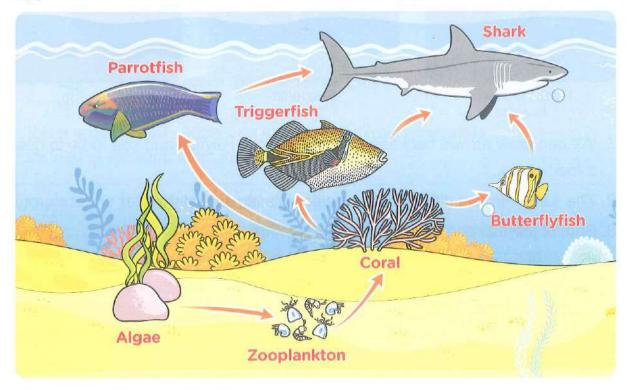
LESSON

Activity 11 Impact on a Food Web

- ▶ Look at the opposite picture, then put (√) or (x):
 - 1. Coral reefs are considered important habitats for many marine organisms.
 - Coral reefs bleaching negatively affects the fish communities.



- Coral is an important component of many marine food webs, where it is considered as:
 - Food for a variety of primary consumers.
 - Shelter for many organisms in the sea.
 - So, the loss of coral due to extreme weather or pollution leads to destroying the marine ecosystem.
- ▶ Look at the following marine food web, then observe what would happen to this food web if the coral reef disappear?



140

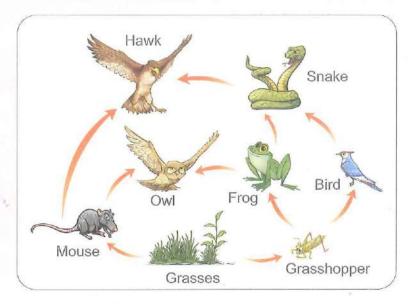
If the coral reefs disappeared:

- Organisms that depend on coral for food and shelter will die.
- The parrotfish, triggerfish and butterflyfish will have nothing to eat, so they will die.
- The shark will find a small amount of food to eat, so it also may die.
- The algae that live in the coral tissues will lose their habitats.



Check your understanding

▶ Look at the following food web, then answer the question below :



n your opinion, what would happen if the grasses die ?	

In the Assessment Book:

Try to answer:
Self-Assessment 17

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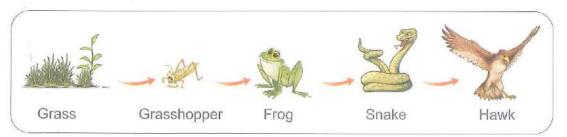
Exercises on Lesson 5

Understand Apply Analyze Create Evaluate Choose the correct answer: 1. Coral reefs are considered as resources of a. food only. b. shelter only. c. food and shelter. d. food and pollution. 2. Algae in coral reefs provide food for directly. a. primary consumers b. secondary consumers c. producers d. top predators Coral reefs bleaching negatively affects directly. a. parrotfish only b. triggerfish only c. butterflyfish and shark d. parrotfish and triggerfish 4. All marine living organisms in seas and oceans form a. many food webs. b. one food chain only. c. two separated food chains only. d. three separated food chains only. 5. are living organisms that are negatively affected by pollution of marine ecosystem. a. Whales and lions b. Sharks and tigers c. Elephants and deers d. Algae and fish 6. Which of the following two living organisms don't have direct food relationship between them?..... a. Parrotfish and shark. b. Butterflyfish and shark. c. Triggerfish and shark. d. Eagle and shark. Choose from column (B) what suits it in column (A): (A) (B) 1. Coral reefs a. they are marine top predators. 2. Triggerfish b. they are producers in the marine ecosystem. 3. Algae c. they are prey for sharks. d. they are food resources for parrotfish. 1. 2. 3.

3 Put (V) or (X):

- 1. The polluted water has a positive effect on coral reefs.
- 2. If coral reefs are destroyed, many marine food chains will be destroyed. (
- 3. Primary consumers and predators in seas and oceans are negatively affected by rising water temperature.
- 4. Coral reefs depend on butterflyfish for food and shelter.
 ()
- 5. Coral reefs are considered as a suitable habitat for sharks.

4 Study the following food chain, then choose the correct answer below:



If the number of snakes increases suddenly,

- a. the number of frogs increases and the number of hawks decreases.
- b. the number of frogs decreases and the number of grasshopper increases.
- c. the number of hawks decreases and the amount of grass increases.
- d. the number of grasshopper increases and the number of hawks decreases.

LESSON

6

Activity 12 Record Evidence Like A Scientist

▶ In this concept, you have learned about changes in food webs. Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in concept one.
? Step 1 The Question
What might happen to a food web when an organism or the environment changes within an ecosystem?
Step 2 My Claim
Step 3 My Evidence
CO Ston A My Scientific Evalenction
Step 4 My Scientific Explanation

Activity 13 Habitat Restoration

- You have learned from the previous lessons that environmental changes and human activities may negatively impact ecosystems.
- But, there are ways through which we can restore the habitat leading to a healthy and balanced ecosystem.

 Restoration projects allow scientists to find out better solutions for reducing the negative impacts of human activities.

 Human activities can cause big changes to the environment such as :

When many plants are removed, riverbanks erode, so floods may reach farther areas when wetlands are drained.



 Once harm occurs to the environment, scientists, engineers and citizens work on "Habitat restoration"

Habitat restoration:

It is the process of returning a habitat (an environment) back to its natural state before harm was done.

The importance of habitat restoration projects

Habitat restoration projects try to repair all parts of the habitat, where they help prevent species from extinction by restoring the habitat (including the resources of food, water and shelter) to the way it was before its damage.



Most of habitat restoration projects require a lot of work and take a long time, but they can have very positive results.

Rebuilding coral reefs

One example of restoring a habitat is "a coral reef rehabilitation project" that happens in the Arabian Gulf, where:

 Scientists collect small parts of different coral species and then move them to a "nursery".



erode التغيرات البيئية erode تآكل repair وصلاح rehabilitation project مشروع إعادة تأهيل

projects wetlands prevent Arabian Gulf مشاريع الأراضى الرطبة يمنع الخليج العربي

riverbanks citizens rebuilding nursery ضفاف النهر المواطنين إصلاح / إعادة بناء المشتل

- Nursery is an area in the sea, where scientists take care of small pieces of coral until they grow up and can be moved back to the reefs where they were dying.
- The healthy coral reefs can continue growing and reproducing to make new coral reefs again.

Protecting coral reefs from plastic pollution

- The world-famous coral reefs of the Red Sea are home to many marine organisms.
- In Egypt, coastal communities near the coral reefs applied a new way of life known as a "zero plastics", where people in these communities:



Replace plastic bags with cloth ones.



What happens if ...

A habitat is not restored.

Many species in this habitat may be lost, because they don't have their needs to survive.



Check your understanding

▶ Put (√) or (x):

- Human activities can't cause changes in the environment.
- 2. Habitat restoration means returning a habitat back to its natural state before harm was done.
- 3. People should not throw plastic waste into the sea.

Activity 14 Review: Changes in Food Webs

▶ We can summarize this concept in the following main points:

- · Ecosystems and food webs are negatively affected by :
 - Climate changes.
- Pollution.
- Human activities.
- Human activities affect the marine habitats through:
 - Overfishing.

ral

- Water pollution.
- · When an ecosystem changes, food webs change too.
- Relationships between organisms in an ecosystem play an important role in keeping this ecosystem balanced.
- When organisms are removed or their role in an ecosystem changes, this
 ecosystem could be destroyed.

Population:

It is the number of organisms of one type of species living in an area.

- In an ecosystem, all species depend on other species for survival, so an increase or decrease in one species affect the population of other species causing a population change.
- Seabirds feed on small fish which feed on microorganisms that float on the surface of the sea.
- · Microorganisms can make their own food and they are found in cold water habitats.
- Healthy habitats are important to all organisms in a food web, because they
 provide organisms with resources that they need to survive as: air, food, water and
 shelter.
- When habitats are destroyed, different organisms may not be able to survive and this will negatively affect the flow of energy in the food web.
- Coral reefs provide food and shelter for large numbers of fish and other marine organisms and also they are important for tourism, so the loss of coral due to extreme weather or pollution leads to destroying the marine ecosystem.
- Coral reefs bleaching happens when the temperature of water rises.

- Destroying of coral reefs due to coral bleaching has negative effects on fish, coral and human communities.
- When the amount of plastic increases in the sea, the number of marine organisms decreases, so marine food webs will be affected leading to a breakdown in the flow of energy.

Habitat restoration:

It is the process of returning a habitat back to its natural state before harm was done.

- Nursery is an area in the sea, where scientists take care of small pieces of coral
 until they grow up and can be moved back to the reefs where they were dying.
- · People should:
 - recycle the plastic products instead of throwing them in the sea.
 - replace the plastic forks with wooden ones.
 - replace the plastic bags with cloth ones.

In the Assessment Book:

Try to answer:

Self-Assessment (18)

Model Exam on Theme (1)

Exercises on Lesson 6

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ms

0	Und	lerstand	○ Apply	Analyze	● Evaluate	Create	
1	C	hoose the correc	ct answer :				
•	1.	a. Throwing plab. Leakage of oc. Overfishing a	stic products in w		a marine ecosys	stem ?	
•	2.	Habitat restorat a. increase harr c. keep harms	5 S0	b. decrease har	ms	n ecosyste	em.
•	3.	Removing plant a. water. c. primary const		n negatively impac b. sunlight. d. nonliving thin			
•	4.	The place in whis located in a. seas.		c. deserts.		hey grow ι	ıp
•	5.	up is known as		ake care of small p		ntil they gr	ow
•	6.	All the following process. a. growing	processes show b. bleaching	coral reefs in heal	thy conditions, e	except	••••
0	7.	To reduce polluta. wooden forks).	eplace white plasti b. black plastic t d. green plastic	forks.	1493F	
•	8.			lied in Egyptian co decreases by c. 90%		ies, means	8
2	Pi	ut (//) or (x):					
	1.	Removing plant	s negatively affec	ts consumers in a	n ecosystem.	()
6	2.	Restoration pro	jects are used to f	find out solutions f	or increasing po	ollution. ()
•	3.	It is better to ke	ep natural resourd	ces healthy than a	pplying restorati	ion ()

Understand

We can use figure (B) as a nursery for corals until they grow up.

Study the opposite figure, then choose the correct answer:

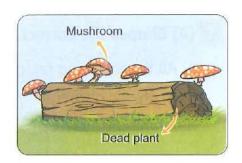
This figure shows

the

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- a. energy transfers from mushrooms to dead plant.
- b. energy transfers from dead plant to mushrooms.
- c. oxygen gas transfers from air to dead plant for breathing process.
- d. carbon dioxide gas transfers from air to dead plant for photosynthesis process.



8 Choose what happens if we cut down a large number of trees in a forest?

	Carbon dioxide gas in air	Riverbanks	Flooding
a.	decreases	erode	increases
b.	decreases	increase	decreases
c.	increases	erode	increases
d.	increases	increase	decreases

3

Total mark

Model Exam on Concept (1.3)

			20	
1	(A) Choose the correct answer:		(5 ma	irks)
	1. All the following factors pollute the	water, except		
	a. plastic garbage.	b. sunlight.		
	c. animals wastes.	d. humans wastes.		
	2. In a food chain, the energy transfe	ers		
	a. from a consumer to a producer.	b. from a predator to a producer.		
	c. from a predator to a prey.	d. from a prey to a predator.		
	3. Seabirds build their nests			
	a. on the water surface.	b. deep down into the sea.		
	c. on the top of mountain cliffs.	d. deep down into the river.		
	4. As a result of coral reefs bleaching	, coral will be		
	a. increased. b. enlarged.	c. survived. d. died.		
	(B) What happens if ?			
		mers in an ecosystem decreases.		
		*		
2	(A) Put (V) or (X):		(5 ma	rks)
Ī	Coral reefs eat butterflyfish to get of	energy	()
		st replace plastic bags with cloth ones	()
	Ecosystem can be negatively affect		. /	,
	and human activities.	on by omnate onanges, ponduon	()
	(B) Give reasons for :			
		r from difficulty broathing		
	In case of forest fire, animals suffe	r from difficulty breatfiling.		
	2. Coral bleaching happens when the	water temperature rises.		
		•		

(5 marl	(A) Complete the following sentence using these words:
	(marine environment - ecosystem - shelter)
for	Coral reefs are considered as an that supply food and many living organisms which live in
	(B) Form a food chain by using the following living organisms :
	(Lion – Grasses – Deer)
(5 mark	(A) Write the scientific term of each of the following :
,	It is an area in the sea, where scientists take care of small pieces of soral until they grow up
(of coral until they grow up.
(Small pieces of plastics in the size of rice grains and they cause harms to the coral reefs.
	3. It is the number of organisms of one type of species living in an area.
	(B) Correct the underlined words :
	1. Due to rising of water temperature, coral reefs turn completely into
(green.
	2. Producers need the energy of moonlight to make photosynthesis
(process.

l mark

narks)

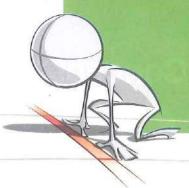
Theme Two: Matter and Energy

Particles in Motion



Get Started

What I Already Know



In the previous years, you have learned that matter can be found in three states which are solids, liquids and gases.







Picture (2)

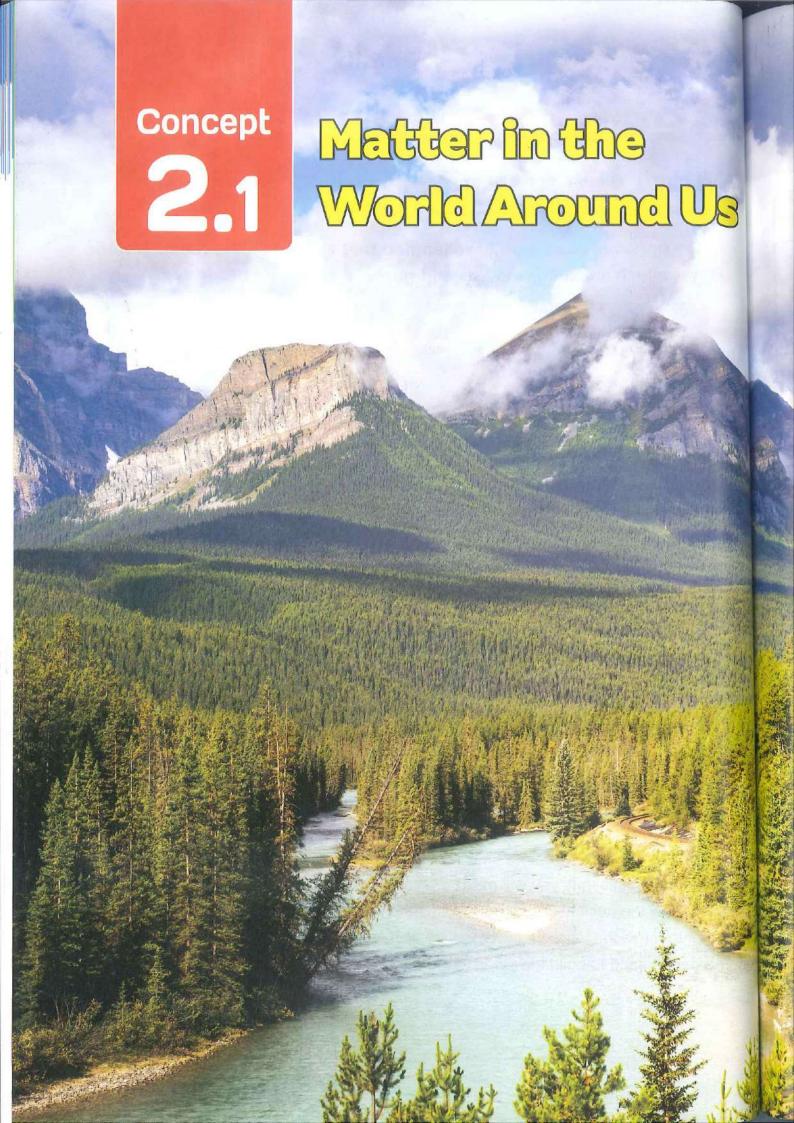


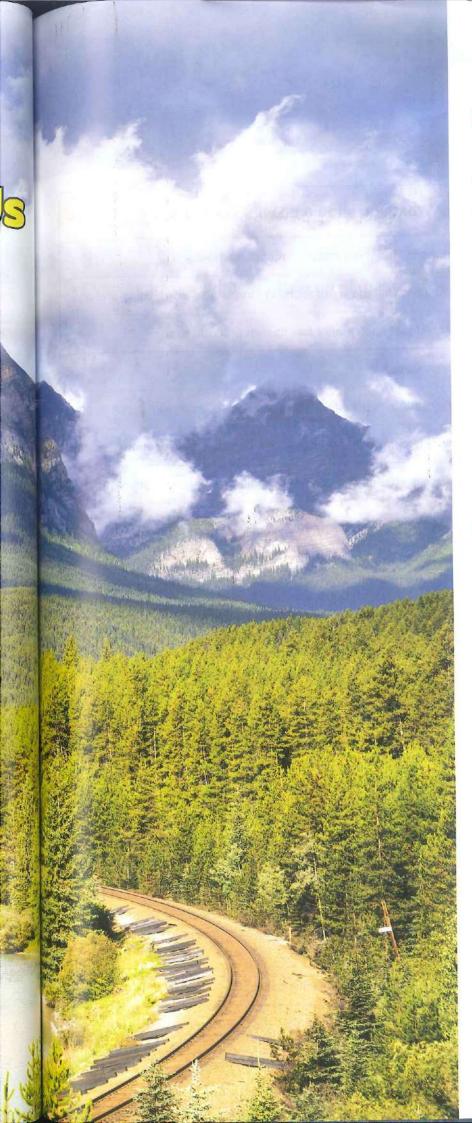
Picture (3)

- When observing the pictures above that show different volcanoes, you can find the three states of matter, where:
- Picture (1) shows gases comes out of a volcano.
- Picture (2) shows lava which is a liquid state of matter that comes out during a volcanic eruption.
- Picture (3) shows volcanic rocks which are solid state of matter. These rocks are formed when lava cools down.
- In this unit, you are going to study:
 - Matter is composed of very small particles.
 - The properties of particles of solids, liquids and gases.
 - How to identify, describe and measure matter.
 - Physical changes and chemical changes of matter.
- Unit Project : "Slippery Sand":

At the end of this unit, you will make a research project about how the ancient Egyptians mixed sand with water to move the large heavy blocks stones across the desert sand to build the pyramids.







Learning outcomes

By the end of this concept, your child will be able to:

- Communicate the defining characteristics of the three states of matter.
- Explain how changes in states of matter result in changes to the movement of the particles within matter.
- Develop models of particles of matter in different states.

Key vocabulary

- Gas
- Liquid
- Mass
- Material
- Matter
- Model
- Particle
- Property
- Solid
- State of matter

Notes For Parents On Concept [2.1]

Lessons	Activities	What you should do with your child
	Activity 1	Discuss with your child the three states of matter on the Earth.
1	Activity 2	Discuss with your child that the water found in three states solid, liquid and gas.
	Activity 3	Explain to your child that each matter has its own properties.
	Activity 4	Digital extension activity.
2	Activity 5	Explain to your child how to describe the three states of matter.
	Activity 6	Discuss with your child the differences between particles in each state of matter.
	Activity 7	Discuss with your child the differences between shapes in each state of matter.
	Activity 8	Digital extension activity.
3	Activity 9	Digital extension activity.
	Activity 10	Explain to your child that the matter is something that we can feel, see or smell.
	Activity 11	Explain to your child that any matter is made up of very tiny particles.
4	Activity 12	Explain to your child how modeling the particles of matter.
4	Activity 13	Discuss with your child how particles of any matter are very tiny.
	Activity 14	Discuss with your child the importance of models.
5	Activity 15	Explain to your child the arrangement of particles in each state of matter.
	Activity 16	Digital extension activity.
	Activity 17	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
6	Activity 18	Discuss with your child how we use the three states of matter to prepare and cook food.
	Activity 19	Let your child review the main points in this concept.

LESSON

1

Activity 1 Can You Explain?

- The opposite photo show liquid water, steam (water vapor) and glass which are different types of matter.
- · Everything around us is made up of matter.



Matter:

It is anything that has a mass and takes up space.

Note

Any matter takes up space means that this matter has a volume.

What are the different forms of matter that can be found in the world around us?

- Most matter on the Earth is found in three main states or forms which are Solid,
 Liquid and Gas.
- To describe any matter, you should study its properties such as shape, volume (size), color, texture, hardness, temperature etc., so it is very important for scientists to know the properties of matter.
- All things in the world are made up of matter, so it is very important for scientists to know the properties of matter.
- · Any matter is made up of tiny particles that we cannot see with our eyes.

In this concept, we will study:

- · States of matter.
- Particles of matter.
- Modeling the particles of matter.
- Tiny particles size.

Activity 2 States of Water

▶ Look at the opposite picture, then put (√) or (x):

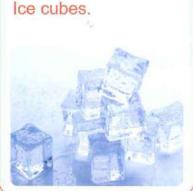
- 1. Ice cubes are considered the liquid state of water.
- 2. Water is found on the Earth in the gas state only.)
- In this activity, we will study the three states of water as an example that shows the three states of matter.



States of water

Solid state

such as:



Liquid state

such as:

Water flowing out of the tap.



Gas state

such as:

Steam comes out of the boiling water.



From the previous diagram, you can observe that :

- 1. Water can be found in the three states of matter.
- 2. Water can be changed from one state into another. (as we are going to study in the next lessons).



Check your understanding

▶ Put (√) or (x):

- Steam that comes out of a hot cup of tea is considered the gas state of water.
- 2. Water is found in five states on the Earth.

160

ice cubes

flowing out مكعبات ثلج

tap تتدفق

صنبور

Activity 3 More About Matter

From the previous activities, you have learnt that :

- Everything is made up of matter such as : people, trees, mountains, air and water ... etc.
- Each matter has its own properties.
- Properties help us to describe any matter.

Note

Property: It is a characteristic (or quality) of a matter.

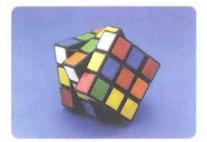
Properties of matter include

1 Color Matter may be colored with :



One color

in



Many colors



Colorless (No color)

2 "Size" Volume Matter are found in different sizes :



Bigger than our planet



So small, you cannot see them such as germs

3 Temperature Some matter can be :



Hot



Cold

mountains جبال charac planet کوکب germs

characteristic

صفة مميزة

4 Shape Different matter have many shapes such as :



Round like a ball



Square like a block





Hard like a brick



Soft like a feather



Examples of solid matter	Examples of liquid matter	Examples of gas matter
Ice – Wood – Stone Iron – Sand	Water – Oil – Milk Vinegar – Gasoline.	Water vapor (steam) – Air – Oxygen – Carbon dioxide.



Check your understanding

▶ Complete :

- 1. To describe a matter, we must know its
- 2. Properties of matter include, shape _____ and ____ and ____



Digital Extension Activity

in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

In the Assessment Book:

Try to answer: Self-Assessment (19)

round	
brick	
feather	

Exercises on Lesson 1

Understand	○Apply	Analyze	● Evaluate	Create	9
Choose the corre	ect answer:				
		-1-1			
1. Matter be can			4 7		
a. 2	b. 3	c. 6	d. 7		
		tate in the form of			
a. ice.	b. steam.	c. sea water.	d. boiling wate	r.	
3. An example of	a gas is				
a. chocolate.	b. rock.	c. pencil.	d. oxygen.		
4. The amount of	space that a ma	tter takes up is ca	ılled		
a. volume.	b. mass.	c. weight.	d. area.		
5. All of these sul	ostances are liqu	ids, except			
a. oil.	b. milk.	c. stone.	d. vinegar.		
6. Both and	I have the s	same state of mat	ter.		
		c. wood-milk		ic	
Choose from col	umn (B) what sui	ts it in column (A): (B)		
1. Carbon dioxio		a. is not a		***************************************	
2. Sand		b. is a liqu	id matter.		
3. Gasoline		c. is a gas	matter.		
		d. is a solid	d matter.		44
1	2		3		
Put (V) or (X):					
1. Ice is consider	ed the solid state	of matter.		(
2. Matter never c	hanges from one	form to another.		(
3. All forms of ma	atter are colored.			(
4. Volume is the	space that is take	en up by a matter.		(
5. All matter have	only one shape	į.		(
6 All objects can	he seen with the	naked eve		(

163

4	Write the scientific term of each of the following:	
	1. Anything that has a mass and a volume.	()
0	2. A property of matter by which we can distinguish between hot	
	and cold objects.	()
•	3. The state of water after its freezing.	()
5	Complete the following sentences :	
	1. States of matter are and liquid.	
0	2. Iron and gold are examples of state of matter.	
•	According to temperature, matter can be classified into ar objects.	nd
8	4. According to hardness of matter, a sponge and a feather are examp	oles of
	matter, while a coin and a brick are examples of	matter.
0	5. The state of an ice cube is, while the state of the air we be	reathe
	is	
6	Cross out the odd word :	
	1. Oil – Milk – Water – Wood.	()
	2. Plastic – Vinegar – Iron – Aluminium.	()
	3. Coal – Carbon dioxide – Oxygen – Air.	()
7	Give reasons for :	
	1. Salt is a matter.	

•	Rubber differs from iron. (according to their hardness).	

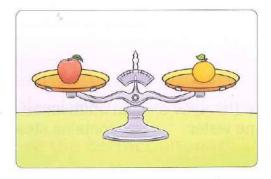
8	What happens if ?	
•	Water is heated in the kettle for few minutes. (according to the state of heating).	f water after

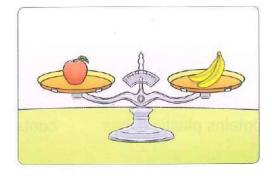
Four different materials (A, B, C and D) each of them has a mass = 20 grams.
 Then they were put into four cups containing equal amounts of water.
 After 10 minutes, their masses were changed as shown in the table below.

Material	Mass after 10 minutes
(A)	28 grams
(B)	25 grams
(C)	30 grams
(D)	22 grams

- 1. Which material absorbs the least amount of water?
 - a. A
- b. B
- c. C
- d. D
- 2. Which material absorbs the most amount of water?
 - a. A
- b. B
- C. C
- d. D

10 Look at these figures then choose the correct answer:





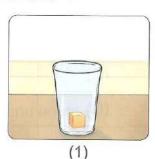
- a. The mass of the two bananas is greater than the mass of the orange.
- b. The mass of the apple is smaller than the mass of the orange.
- c. The mass of the orange is smaller than the mass of one banana.
- d. The mass of the orange is equal to the mass of the two bananas.

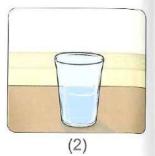
LESSON

Activity 5 Observing Matter

▶ Look at opposite figures, then put (√) or (x) :

- 1. In cup (1), the wooden cube has a definite (fixed) shape.
- 2. In cup (2), water doesn't take a space inside the cup.)

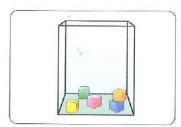




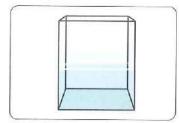
· In this activity, we will do an experiment to show how to describe the three states of matter (solids, liquids and gases).

▶ Tools

Three glass containers (A), (B) and (C).



Container (A) contains plastic cubes



Container (B) contains some water



Container (C) contains steam

Step

Observe the properties of the contents of each container and record your observations in a table.

Observations

Matter	Shape	Volume	Solid , Liquid or Gas
Plastic cubes [in container (A)]	Have a definite shape	Have a definite volume	Solid
Water [in container (B)]	Has no definite shape	Has a definite volume	Liquid
Steam [in container (C)]	Has no definite shape	Has no definite volume	Gas

-								
	5	573	100	6 1	0	10	100	0
				-	3			3

· Solids:

Have definite (fixed) volume and shape.

· Liquids:

Have definite volume but they don't have definite shape so, they take the shape of their containers.

· Gases:

Have no definite volume and shape, so they take the volume and shape of their containers.

Note

Some gases can't be seen such as air, but :-

- You can see air move when the wind blows and moves some objects.
- You can see a balloon gets larger when you blow air into it.

Check your understanding ▶ Put (√) or (x):

А	1.5	~id	mal	tor boo	_	dofinito	

- Liquid matter has a definite shape.
- 2. Gases have no definite volume and shape.

Choose the correct answer:

- 1. matter has a definite shape and definite volume.
 - a. Solid b. Liquid
 - c. Gas
- 2. and are matter take the shape of their containers.
 - a. Solid-liquid b. Solid – gas
- c. Liquid gas

حاو

Activity 6 Matter

- · Solids, liquids and gases are made up of very tiny things called particles.
- · Particles of all matter are in continuous motion.
- The following table shows the differences between particles in each matter state :-

Particles of solid matter	Particles of liquid matter	Particles of gases matter
 They are very close to each other (packed tightly). 	They have more spaces.	They have a lot of spaces.
They have less energy.They move only a little bit.	They have more energy.They can move more freely.	They have a lot of energy.They move very freely.

- From the previous explanation, we can determine the state of matter by :
 - 1. Describing the properties of matter.
 - 2. The motion of particles of matter.

Measuring and observing matter

- Some properties of matter can be measured such as :
 - We can measure the length of some matter using a ruler or a measuring tape (tape measure).
 - We can measure the mass of matter using a scale.

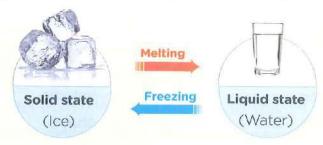




scale

Notes

1. Matter can change from one state to another state such as :



There are some things that are not matter such as light and sound which are forms of energy.



te:-

gy.

Check your understanding

- ▶ Complete :
 - 1. All matter are made up of tiny
 - 2. The particles of matter have a lot of energy.
- ▶ Choose the correct answer :
 - Particles of matter are very close to each other and they have less energy.
 - a. solids

b. liquids

- c. gases
- 2. particles move less than liquid particles.
 - a. Solids

b. Liquids

c. Gases

In the Assessment Book:

Try to answer : Self-Assessment 20

light

Exercises on Lesson 2

	Inderstand	OApply	Analyze	Evaluate	• Create
1	Choose the correct	ct answer :			
	1. Liquids have de	finite, but	their are not	definite.	
	a. volume – sha		b. color-volume		
	c. shape-volun	ne	d. color-shape		
0	2. Both and	are solids	as they have defin	ite shape and vol	ume.
	a. wood-oxyge		b. milk-iron		
	c. wood-iron		d. milk-oxygen		
0	3. One of the subs	stances that does	n't take the shape	of its container is	i
	a. oil.	b. coin.	c. gasoline.	d. water.	
0	4. Both and	take the sh	nape of their contain	iner.	
	a. air-plastic	b. water-air	c. wood-air	d. water-plas	iic
•	5. Gases have	shape and	volume.		
	a. definite-defin	nite	b. no definite-n	o definite	
	c. definite-no d	lefinite	d. no definite-d	lefinite	
	6. Particles of	are very close	to each other.		
	a. gold	b. steam	c. milk	d. oxygen	
0	7. Particles of all t	he following subs	tances have a lot	of energy, except	
	a. water vapor.	b. carbon dioxid	le. c. oxygen.	d. rubber.	
9	8. To measure the	length of a table	, we can use a		
	a. thermometer		b. balance scale	е.	
	c. cylinder.		d. measuring ta	pe.	
2	Choose from colu	mn (B) what suit	s it in column (A) :		
			0.1	(D)	

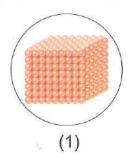
Column (A)	Column (B)		
1. Milk	a. its particles are packed tightly.		
2. Air	b. its particles have medium energy.		
3. Wood	c. its particles move very freely.		
	d. its particles don't move at all.		

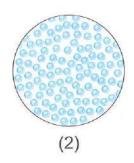
A	2	2
1	۷	J

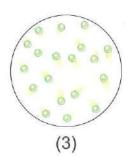
	Fut (V) of (A).		
	1. All forms of matter have volume.	()
	2. Liquids don't take the shape of the container that they are placed in.	()
	3. Both gold and milk have definite shape.	()
	4. Gases keep their shape and volume whatever the container changes.	()
	5. On transferring water from one pot to another, its volume will change.	()
•	6. Particles of water can move more freely than the particles of water vapor.	()
4	7. Particles of all matter are in a continuous motion.	()
	8. Light and sound are forms of matter.	()
4	Write the scientific term of each of the following :		
	1. The state of matter that has definite volume and shape. (•••••)
0	2. The state of matter that is characterized by having a definite volume		
	but it doesn't have a definite shape. ()
	3. Substances that take the shape and the volume of their containers. ()
	4. The state of matter that has a lot of spaces between its particles. ()
0	5. The tool used to measure the length of a wall. (******)
5	Complete the following sentences :		
	1. States of matter are, and gases.		
0	2. In the matter, the volume and shape don't change.		
9	3. Water is a matter in state, while water vapor is a matter in	stat	e.
•	4. Matter that takes the shape of its container, but its volume cannot be chan is	iged	ł
0	5. The of a pen can be measured by using a ruler.		
•	6. Particles of matter are very close to each other.		
6	Give reasons for :		
0	1. Sugar is a solid matter.		
			••••
9	Wood has definite shape and volume.		
0	3. Oxygen has no definite shape or volume.		

ate

- 4. Particles of a piece of iron are very close to each other.
- 7 What happens to ... ?
 - 1. The shape of water if we put three equal amounts of water in three different containers.
 - 2. The volume of a coin if we transfer it from a cup to another cup.
- 8 Study the following figures that represent particles of three states of matter, then put (🗸) or (X):







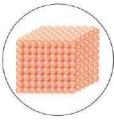
- 1. Figure (1) represents solid matter.
- 2. Figure (2) represents liquid matter.
- 3. By increasing the spaces between the particles of figure (2), this matter may change into solid state. (
- 4. Particles of figure (1) have more energy than particles of figure (3).

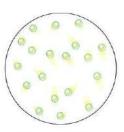
LESSON 3

Activity 7 States of Matter

Look at the opposite figures, then put (\checkmark) or (x):

- Solid particles move freely more than liquid particles.
- 2. Gases matter have definite shapes. ()





Solid particles

Gas particles

States of matter

- · State of matter is a certain form that matter can take which may be solid, liquid or gas.
- ▶ The following table shows the differences between the three states of matter:

The shape of solids matter	The shape of liquids matter	The shape of gases matter
 They have a definite (fixed) shape. 	 They don't have definite shape. 	They don't have definite shape.
 Their shape don't change unless something is happening to change them. 	They take the shape of their containers.	They completely fill their containers and take their shapes.

Notes

- Matter in any state (solid liquid gas) takes up space.
- 2. If there are two objects, they cannot take up the same space at the same time.



Check your understanding

De 1	Dir	1-	1/1	OF	141	
	Fu	-	(V)	OI	(~)	

1. Liquids matter take the shape of their containers. ()
---	---

2.	. Gases matter have no definite shape.	(
	I delega illustrative tra statistica attaches	

▶ Choose the correct answer :

1.	Which	state	of matter	has a	fixed	shape	?	
----	-------	-------	-----------	-------	-------	-------	---	--

a. Solid.

b. Liquid.

c. Gas.

2. matter completely fill their containers and take their shapes.

a. Solids

b. Liquids

c. Gases



Digital Extension Activity

Activity 8 "Three States of Matter" in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.



Digital Extension Activity

Activity 9 " What Form Is It?" in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

Activity 10 What Is Matter?

Matter is something that we can

Feel

See

Smell

Such as

Air



Such as Ball

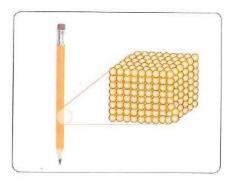


Such as Flower



▶ What is matter actually made of ?

- Any matter such as your hand or desk or pencil is made up of millions of tiny particles that we cannot see with our eyes.
- Some matter are too small to see with human eye such as air and germs, but they are also made up of tiny particles.





Germs



ity.

Check your understanding

▶ Put (√) or (x):

- 1. Any matter is made up of tiny particles.
- 2. Table is an example of matter you cannot see with your eyes.

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Activity 11 Particles of Matter

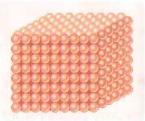
- You have learned in the previous activities that any matter is made up of tiny particles that we cannot see with our eyes, where:
 - Particles are known as "the building units of matter".
 - Regular microscopes help us see some particles of matter.
 - · There are many different types of particles, where different kinds of matter are made of different kinds of particles such as:
 - Particles of gold are different from particles of iron.
 - Particles of water are different from particles of milk.



Particles of solids

They are packed closely together, so:

- They vibrate or move around their place.
- They can't move from one place to another and can't slide over each other.



Particles of liquids

They are held together more loosely, than particles of solids, so:

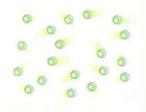
- They move faster than solid particles.
- They can slide over each other so, they take the shape of their containers.



Particles of gases

They are not held together, so:

- They move very quickly in all directions.
- They can spread out to fill up any container they put in.



Check your understanding

▶ Put (√) or (x):

- Particles of solids can move freely from one place to another.
- Liquid particles move faster than solid particles.

In the Assessment Book:

Try to answer: Self-Assessment (21)

Exercises on Lesson 3

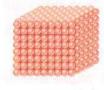
• Understand	O Apply	Analyze	● Evaluate	Creat	e
Choose the	correct answer:				
 1. The shape a. gold-lice 		s it is a matter quid <mark>c.</mark> air–gas	d. gold-solid		
 2. Oil takes the a. volume 	ne of its conta b. shape	ainer. c. color	d. mass		
shape, so a. change-	the shape of milk v	vill and its volu	e-not change.	erent	
4. Particles oa. glass	f vibrate arou <mark>b</mark> . air	und their place. c. oxygen	d. water		
5. The movera. wood.	nent of particles of b. plastic.	water are slower th	an that of d. gold.		
a. its particb. its particc. its partic	les move faster tha les move slower th les can't spread to	an solid particles.			
2 Put (🗸) or (X);				
		nore than solid parti	cles.	(
	akes the shape of i			(
	t have a definite sh	programme and the programme an		(
			rticles of a golden rin	g. (
		be examined by reg		(
			that of water particle	s. (
		and salt cannot take	e up the same space	,	
at the same		4 £	I C -	(
		t from particles of pl		(
		h of the following:			
	natter that has a fix	xed shape.	(**********	
	g units of matter.		(********	• • • •
 3. A device us with the na 		jects that are too sm	nall to be seen		

	4. A state of matter that its particles vibrate around their place. 5. A state of matter that its particles move faster than solids and have a definite volume. (
4	Complete the following sentences :
•	Any matter is made up of millions of tiny that we cannot see with our eyes.
•	2. The shape of matter doesn't change unless something is happening to change it.
0	3. Particles of matter are packed closely together.
0	4. Particles of liquid matter can move more faster than matter and more slower than matter.
0	5. Particles of matter can slide over each other so they take the of their containers.
5	Give reasons for :
	1. Air has no definite shape or volume.
•	2. Particles of gases can spread out quickly to fill up any container they put in.
6	What happens if ?
•	Water changes into ice. (according to its shape).
	2. A liquid changes into gas. (according to the speed of particles).

3. We try to examine the particles of any substance with our naked eyes.

7 Look at the opposite figures that represent • the three states of matter, then complete the following sentences:

- 1. Matter in figure takes the shape of its container but its volume doesn't change.
- 2. Particles of figure move faster than that of figure and figure
- 3. Particles of figure are not held together.





Matter (A)

Matter (B)



Matter (C)

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Activity 12 Modeling the Particles of Matter

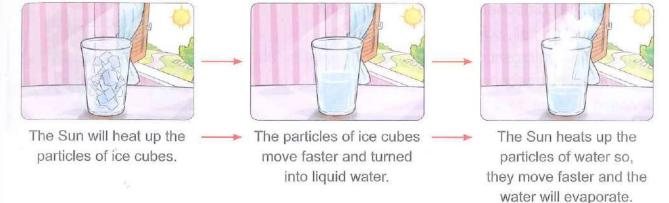
Look at the opposite picture, then complete the sentences using the following words:

[heat - liquid]

- 1. Water is the state of matter.
- 2. Ice needs to change into liquid state.



When a cup of ice cubes exposed to the Sun in a hot summer day :



- Using models is a way to study some scientific concepts that can make ideas more clear.
- Objects that are too small such as germs or too large such as solar system can be studied easily when using models.
- To make a model of particles that make up a matter, you can use ping pong balls as they are three-dimensional units and can be separated from each other.

So, you can use these balls to describe the movement of particles of the three states of matter.



Ping pong balls



Check your understanding

Choose the correct answer:

- 1. When you heat a solid matter, the movement of its particles
 - a. becomes slower
- b. becomes faster.
- c. doesn't change.
- 2. If you heat a liquid matter, it will change into matter.
 - a. liquid

b. solid

c. gas

Activity 13 Tiny Particle Size

Tiny particles size

- · The size of particles depends on :
 - 1. The type of particles.
 - 2. How particles connect with each other.
- The average size of a particle is so tiny that one of your hairs is about 150,000 to 300,000 particles.
- To see the components of one particle such as one blood cell, scientist cannot use the regular microscope, but they use a special microscope, called electron microscope.



Blood cells



Electron microscope

▶ How can we show that particles exist?

• To show that the invisible particles are really exist, we can use a gas matter such as air which is made up of invisible tiny particles as follows:

When you blow up a balloon

- The particles of air inside the balloon move very quickly.
- The particles of air hit and bounce the balloon from inside, so they produce a force that inflates the balloon and gives it a round shape.



When you squeeze a balloon

- The particles come close together so, the balloon becomes smaller.
- If you squeeze more on the balloon, it will pop and the particles of air inside the balloon will escape.





Check your understanding

	, s	1/2		1	
	2117		Or	(W)	
1		 1		(x)	

- 1. To see the components of a tiny particle, we need electron microscope. ()
- When you blow up a balloon, the air particles inside the balloon move very quickly.()

▶ Choose the correct answer :

- 1. To see the components of one blood cell, we need
 - a. electron microscope.
 - b. scale.
 - c. measuring tape.
- 2. The size of particles depends on all the following, except
 - a. the color of particles.
 - b. the type of particles.
 - c. the connection between particles.

In the Assessment Book:

Try to answer: Self-Assessment (22)

t

Exercises on Lesson 4

	Understand	Apply	Analyze	Evaluate	Create	
1	Choose the cor	rect answer:				
	1. By changing	the of a m	atter, its state may	change.		
	a. mass	b. volume	c. color	d. temperatu	re	
0		oosed to high ten	mperature, its part	icles will move	and the	
	a. faster-ice.		b. faster-wa	iter vapor.		
	c. slower-ice	• 6	d. slower-w	ater vapor.		
	3. We can use a	a model to study	very large things	such as		
	a. solar syste	m.	b. germs.			
	c. microbes.		d. viruses.			
0	4. By blowing up	p a balloon,				
	a. its volume	decreases.	b. its volume	e increases.		
	c. its color ch	anges.	d. its mass o	doesn't change.		
	5. To examine the structure of tiny particles of a matter, we can use					
	a. microscope	es.	b. balances.			
	c. thermomet	ers.	d. rulers.	*		
2	Put (v) or (x):					
•				en with the naked e)
	three-dimens	ional units.			()
	3. Air particles a	re visible as the	y are very large pa	articles.	()
	4. To see compo	onents of one pa	rticle such as a blo	ood cell, we can us	е	
	the regular m	icroscope.			()
	5. By squeezing	a balloon, you d	lecrease the spac	e that the gas parti	cles can	
	occupy.				()
•	6. The type of page 1	articles affects th	neir size.		()
3	Write the scient	tific term of eacl	of the following	:		
			ating for high temp		()
	2. A device used	to examine one	tiny particle such	as a blood cell.	()

4 Complete the following sentences:
1. When an ice cube is exposed to the Sun, the speed of movement of its particles will
2. Water evaporates when it is exposed to a temperature.
3. We can use ping pong balls to describe the movement of of the three states of matter.
 4. To describe the particles of a matter in state by modeling balls, we should put the balls packed together.
Scientists cannot use the microscope to see the components of one blood cell.
5 Give reasons for :
1. Using models to study some scientific concepts.
 2. Sometimes we need to use an electron microscope.
6 What happens to?
The speed of particles of an ice cube when it is exposed to the Sun.
2. The size of a balloon when you blow it up.
7 Look at the opposite model that shows the particles of a substance,
then complete the following sentences:
1. This model represent a substance in state.
2. If we want to make changes in this model
to show this substance in a liquid state, we
should the distances between
balls.

▶ Look at the opposite picture, then put (√) or (x):

- 1. This model represents the moon. ()
- 2. The model of the Earth shows how much of its surface is covered with water. ()



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Globe

Models help us understand things we cannot easily see such as :

We cannot see the Earth which is too big while we are standing on it. But, we can
observe and understand it using the model of globe shown the previous picture.

Model:

It is a copy that is similar to a real thing.

- Models may be drawings, objects or ideas that represent a real event, object or process.
- Models look like, move like or work like what they copy.

How do models help us look at big things?

- · Models can represent very big things in a smaller size, because it is hard to see them.
- Let's see two examples of models for very big things.

Example 1: The Earth:

- A globe represents a model of the Earth which shows us:
 - The shape of the Earth.
 - How much of the Earth is covered with water.
 - Where different countries are located.

Example 2: The solar system:

- Solar system is a very big place, planets and the Earth are very big objects.
- · A model of the solar system helps us :
 - See all planets at once.
 - Compare between planets which one is biggest and which one is closest to the Earth.



Globe



Model of solar system

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How do models help us look at small things?

- Models can represent very tiny things in a bigger size, because it is hard to see them.
 - Germs are very tiny and they are spread around us which make us sick.
- · A model of a germ helps us :
 - See the shape of a germ without microscope.
 - See different parts of germs which help them to spread from one person to another.



Models help us understand how things work

Example 1 : A model of a volcano :

- · A model of a volcano shows us:
 - The shape of a volcano.
 - How the liquid that comes out of a volcano during a real eruption.



Model of volcano

Example (2): A model of an airplane:

A model of an airplane shows us how it flies up into the air.



Model of airplane

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From the previous explanation it is clear that models help us:

- Teach something about the real things they copy.
- · See and understand how things work.
- Learn about many things at just the right size.
- · Know what we could not otherwise see.



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Check your understanding

▶ Put (√) or (x):

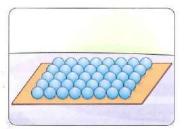
- 1. The globe shows where different countries are located. (
- 2. To study germs we need to bring model of them in big suitable size. ()

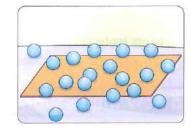
Activity 15 Modeling States of Matter

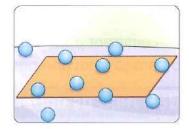
 In this activity, we will observe three models that show the arrangement of particles in each state of matter. (solids, liquids and gases).

Tools

Beads fixed by glue on three pieces of cardboard which represent the different arrangement of particles in each state of matter.







Step

Observe the three models of three states of matter and write the arrangement of particles in each state.

> Observations

The arrangement of beads in:

- Solid model: Beads are arranged in a regular pattern.
- Liquid model: Beads are little far from each other and not arranged in a pattern.
- Gas model: Beads are so far from each other and not arranged in a pattern.

Conclusions

The arrangement of particles in:

- Solid matter: They have a regular pattern (organized).
- Liquid matter: They have a random arrangement (not well organized).
- Gas matter: They have a random arrangement (not organized at all).



Check your understanding

▶ Put (√) or (x):

- 1. Particles of gas matter are organized.
- 2. Liquid matter has particles arranged in a pattern.

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1	1



Digital Extension Activity

Activity 16 " Particles Always in Motion " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

beads organized random

خرز منظم عشماد arrangement pattern ترتیب نمط In the Assessment Book:
Try to answer:
Self-Assessment 23

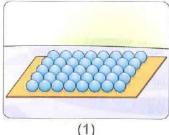
Exercises on Lesson 5

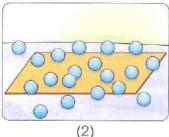
	Understand	OApply	Analyze	Evaluate	Create				
-	Oliderstand	Osephina	Analyze	S Evaluate	Oleate				
1	Choose the corr	ect answer:							
	1. The model of	the Earth shows l	now much of its sur	rface is covered with					
	a. gasoline.	b. water.	c. milk.	d. animals.					
	2. We can see a a model.	ll planets of the	system includ	ing the Earth by using					
	a. solar	b. digestive	c. respiratory	d. muscular					
	3. Some liquids	come out of a	during its erupti	on.					
	a. star	b. wooden pie	ce c. volcano	d. plastic piece					
	4. Particles of	are organized	d and have a regul	ar pattern.					
	a. solids only		b. gases only						
	c. solids and I	iquids	d. liquids and o	gases					
	5. Gases differ fr	rom solids and liq	uids in that gases .						
	a. can be pou	red.	b. fill any conta	ainer they are put in.					
	c. have a defin	nite shape.	d. have a defir	nite volume.					
2	Put (V) or (X):	,							
	description of the control of	is understand thin	ngs that we can eas	sily see with our eyes.	()			
	and the second		planet which is the		()			
			-		()			
	3. Models help us understand ideas, objects or processes.4. We can see the shape of a germ by using a special microscope.()								
	5. Most germs can spread through the air from a person to another. ()								
0	6. A model of an airplane shows us how it flies up into the air. ()			
1	o. / (model of an	displate onews a	o now it mos up in		``				
3	3 Write the scientific term of each of the following:								
	 1. A model of the whole world that is made in the shape of a large ball. 								
			The state of the s)			
•	2. A copy that is	similar to a real th	ning which we canr	not observe with our e		1			
				()			
4	Complete the fo	llowing sentence	es:						
	1. Water vapor p	articles are loose	ly packed, so that	water vapor do not ha	ve				
	a definite or								
	2. The Earth is a	planet in the	svstem.						

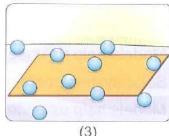
- 3. We can study the location of countries by using a which represents a model of the Earth.
- 4. A model of a germ helps us to see its shape without using a which is
 used to magnify tiny objects.
- 5. Liquids that come out of a volcano have definite but they have no definite

5 Give a reason for the following:

- Both liquids and gases don't have a definite shape and take the shape of their containers.
- 6 What happens to ...?
- The arrangement of particles of water after its freezing.
- 7 The following figures show three models of particles of some matter related • to our planet Earth. Observe the figures carefully, then complete the following sentences:







- 1. Beads of figure could represent the particles of a rock on the Earth's surface.
- 2. Beads of figure could represent the particles of river water on the Earth.
- 3. Beads of figure could represent the particles of air that surrounds the Earth.
- 4. By heating the particles of figure (2), they will be similar to that of figure

LESSON 6

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Activity 17 Record Evidence Like A Scientist

- In this concept, you have learned a lot about the three states of matter and the properties of each state.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in the previous concepts.
- ? Step 1 The Question

What are the different forms of matter that can be found in the world around us?

Step	2 My Clair	n J		
	(6)		 	

Step	3	My Ev	idence)—				
 				.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,	 	 	
 			-			 **********	 	

Step 4 My Scientific Explanation	

Activity 18 S T E M in Action

- ▶ Look at the opposite picture, then put (√) or (x):
 - 1. The smell of food is a gas state of matter.

2. Some liquid matter are used in preparing food such as oil.



Careers and States of Matter

We use the three states of matter to prepare and cook different types of food such as:

Solid matter	Liquid matter	Gas matter
• Rice.	Water.	 Natural gas used in gas
• Pasta.	• Oil.	ovens.
 Frozen vegetables. 	Vinegar.	 Steam of boiling water.

Scientist chef

- Chefs use science during preparing dishes.
- Chefs use different states of matter to change ingredients such as :
- 1. Boiling some water to cook pasta or rice, where liquid water changes into steam which is a gas matter.



2. Freezing vegetables keep them fresh and ready to use for longer periods of time.



وظائف

3. Leave a cup of juice or milk in freezer to change from liquid state into solid state.





Check your understanding

- ▶ Choose the correct answer :
 - 1. All the following are solid matter are used in preparing food, except
 - a. water.

b. oil.

- c. rice.
- 2. When you leave a cup of water in freezer, it will change into state.
 - a. solid

b. liquid

c. gas

Activity 19 Review: Matter in the World Around Us

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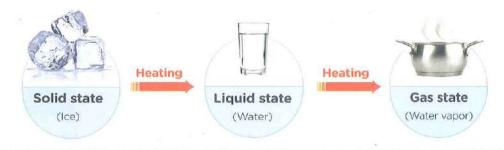
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▶ We can summarize this concept in the following main points :

Matter:

It is anything that has a mass and takes up space.

- Most matter on the Earth is found in three main states or forms which are solid, liquid and gas.
- · Each matter has its own properties.
- · Any matter is made up of tiny particles that we cannot see with our eyes.
- · Particles of all matter are in continuous motion.
- Determine the state of matter by :
 - 1. Describing the properties of matter.
 - 2. The motion of particles of matter.
- · Matter can change from one state to another state such as :



Model:

It is a copy that is similar to a real thing.

- · Models look like, move like or work like what they copy.
- Models can represent very big things in a smaller size such as model of the Earth and the solar system.
- · Models can represent very tiny things in a bigger size such as a model of a germ.
- · Models can help us :
 - Teach something about the real things they copy.
 - See and understand how things work.
 - Learn about many things at just the right size.
 - Know what we could not otherwise see.

Points of comparisons	Particles of solid matter	Particles of liquid matter	Particles of gas matter	
Spaces between particles :	They are very close together so, solid objects are hard.	They have more spaces but still (held) close together.	They have a lot of spaces (are not held together).	
Energy of particles :	They have more energy.	They have less energy.	They have a lot of energy.	
Movement of particles :	They vibrate or move around their place.	They move faster than solid particles.	They move very freely and quickly in all directions.	
Spreading of particles :	They can't move from one place to another & can't slide.	They can slide over each other so, they take the shape of their containers.	They can spread out to fill up any container they put in.	
Arrangement of particles :	They are arranged in a regular pattern (organized).	They have a random arrangement (not well organized).	They have a random arrangement (not organized at all).	
Shape :	They have a definite (fixed) shape.	They don't have definite shape.	They don't have definite shape.	

In the Assessment Book :

Try to answer:

- Self-Assessment 24)
- Model Exam on concept (2.1)

Earth

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Exercises on Lesson 6

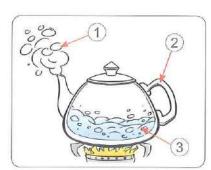
0	Understand	O Apply	Analyze	● Evaluate	Create		
1	Choose the corre	ct answer :					
	1. When we keep water inside the freezer, the state of water changes from into						
	a. liquid – gas.	b. liquid – solid.	c. solid – liquid.	d. gas – liquid.			
0	2. All the following	are liquid matter	that are used in pr	eparing food, exce	ept	**	
	a, water.	b. vinegar.	c. oil.	d. rice.			
•	3. You can see in this picture.	different state:	s of matter	2.8	d.		
	a. two		b. three				
	c. four		d. five				
0	4. A and	are examples	of solids.			_)	
	a. chair – ice	b. juice – ice	c. ruler – steam	d. bottle – milk			
2	Put (//) or (x):			w.			
0	1. Frozen vegetab	les and vinegar h	ave definite shape	1.	()	
	2. Steam of boiling	g water is conside	red the gas state o	of water.	()	
0	3. Natural gas use	ed in gas oven has	s no definite shape	or volume.	()	
•	4. Most of ingredie	ents of vegetables	salads are in solid	d form.	()	
3	Complete the foll	owing sentences	using words belov	N:			
	(solid	– liquid – gas – s	pace – container	s – particles)			
•	1. The state of ma		inite volume, but i	t doesn't have a de	efinite		
•	2. Volume is the a	mount of	that matter takes	s up.			
	3. We can classify	the types of matt	er into liquid,	and	ie:		
	4. Matter is made up of tiny						
•	5. Liquids take the	shape of their					
4	Give a reason for	the following:					
0	Oil used in cookin	g is considered as	an example of liq	uid matter.			
	***************************************	***************************************				****	

5	What	happens	to?
---	------	---------	-----

The state of milk if we put small amount of it in the freezer for few hours.

6 Look at the opposite figure, then put (\checkmark) or (x):

- 1. Label ① refers to a matter in liquid state. ()
- 2. Label ② refers to a matter in solid state. ()
- 3. Label ③ refers to a matter that its shape and volume don't change. ()
- 4. Particles of matter 1 move slower than particles of matter 3.



3

Model Exam on Concept (2.1)

Total mark

1	(A) Complete the following sentences:	(5 mark	S
	1. Iron and gold are examples of	state of matter.	
	2. Matter that takes the shape of its conta	niner, but its volume cannot be changed	
	Any matter is made up of millions of tir eyes.	ny that we cannot see with our	
	Scientists cannot use the mic blood cell.	croscope to see the components of one	
	(B) Give a reason for the following:		
	Both liquids and gases don't have a containers.	lefinite shape and take the shape of the	ir
			i
2	(A) Choose the correct answer:	(5 mari	(S
	1. A and are examples of sol	ids.	
	a. chair – ice	b. juice – ice	
	c. ruler – steam	d. bottle – milk	
	2. The amount of space that a matter tak	es up is called	
	a. volume.	b. mass.	
	c. weight.	d. area.	
	3. One of the substances that doesn't tak	e the shape of its container is	
	a. oil.	b. coin.	
	c. gasoline.	d. water.	
	4. Particles of vibrate around their	place.	
	a. glass	b. air	
	c. oxygen	d. water	
	(B) What happens to ?		
	The size of a balloon when you blow	it up.	
			٠

3 (A) Put (V) or (X):		(5 marks
1. Models help us understand things that	we can easily see with our eyes.	(
2. Steam of boiling water is considered th	e gas state of water.	(
3. Matter never changes from one form in	to another.	(
4. Light and sound are forms of matter.		(
(B) Cross out the odd word:		
1. Oil – Milk – Water – Wood.	()
2. Plastic – Vinegar – Iron – Aluminium.	()
4 (A) Write the scientific term of each of the	ne following :	(5 marks
1. The tool used to measure the length of	a wall. ()
2. The building unit of matter.	()
3. A device used to examine objects that a	are too small to be seen	
with the naked eye.	()
4. The state of water after its heating for h	igh temperatures. ()
(B) Choose from column (B) what suits it	in column (A):	
(A)	(B)	
1. Carbon dioxide	a. is a solid matter.	
2. Sand	b. is a liquid matter.	
	c. is a gas matter.	
1,2		

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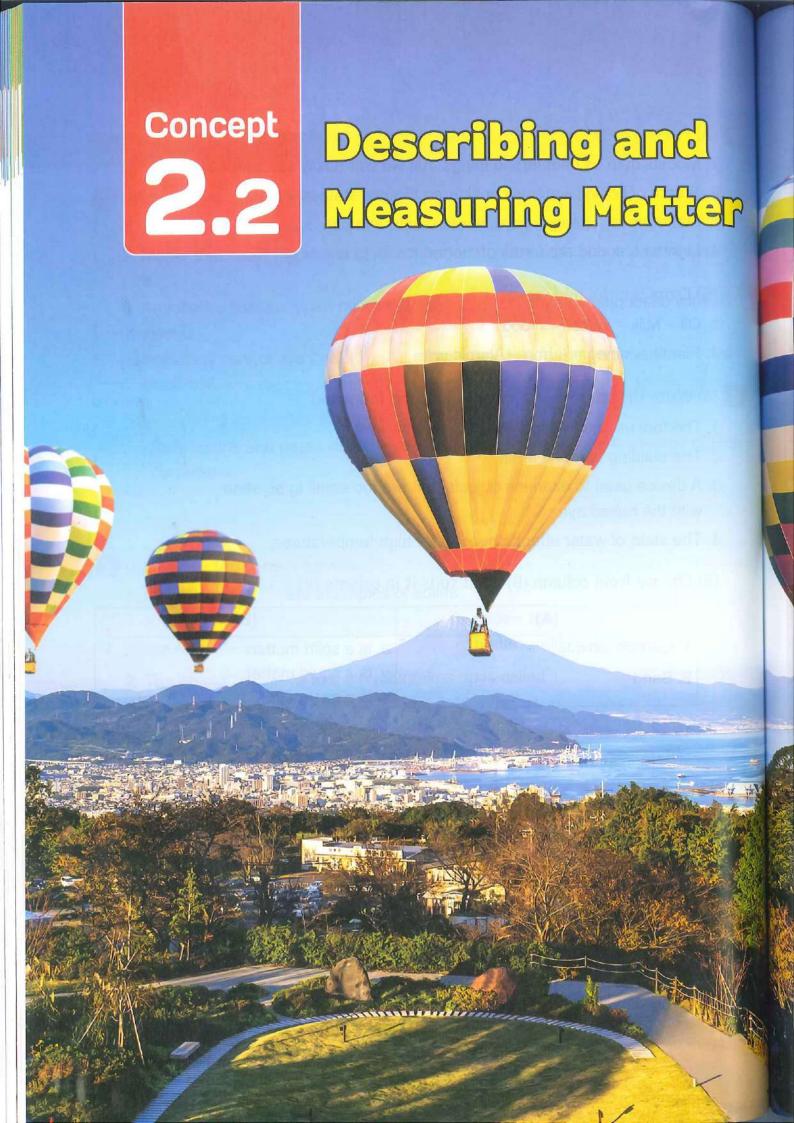
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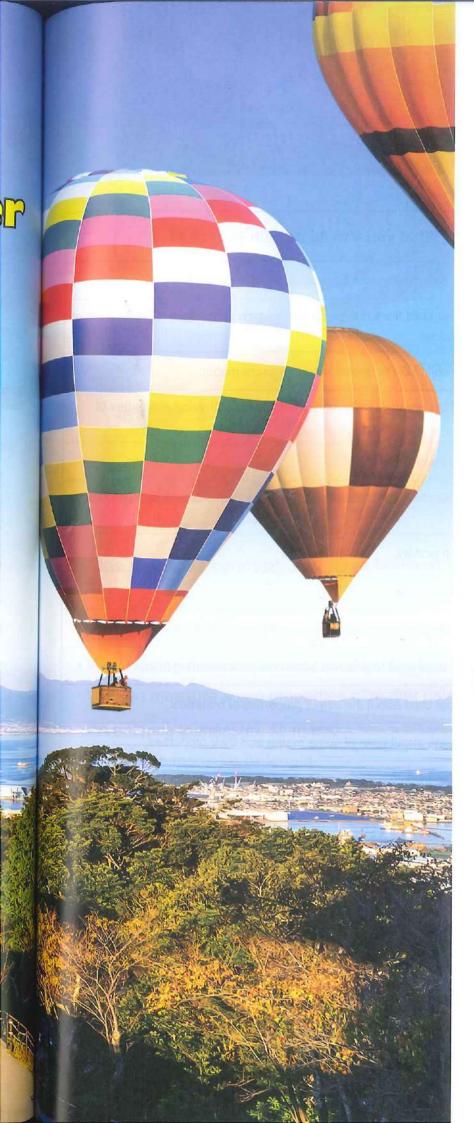
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Learning outcomes

By the end of this concept, your child will be able to:

- Classify materials based on their properties and describe patterns in the properties of similar materials.
- Choose the appropriate tools to measure the size and volume of different kinds of materials in different states of matter.
- Plan and conduct investigations to gather and record information about the properties of various materials.
- Analyze data to identify unknown materials.

Key vocabulary

- Mass
- Property
- Material
- Substance
- Matter
- Volume
- Measure

Notes For Parents On Concept [2.2]

Lessons	Activities	What you should do with your child
	Activity 1	Explain to your child how matter is described and measured.
1	Activity 2	Discuss with your child the kinds of materials which people use to make roofs of homes and buildings.
	Activity 3	Explain to your child how to describe and measure matter.
	Activity 4	Let your child think about the differences between the physical properties of matter.
	Activity 5	Digital extension activity.
2	Activity 6	Discuss with your child about the physical properties and chemical properties of matter.
	Activity 7	Digital extension activity.
	Activity 8	Digital extension activity.
0	Activity 9	Explain to your child how to measure different physical properties of matter.
3	Activity 10	Apply with your child what he/she has learned about measuring matter.
4	Activity 11	Discuss with your child about the useful properties of materials.
4	Activity 12	Let your child think about uses of some matter and their properties.
	Activity 13	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
5	Activity 14	Discuss with your child about the importance of measuring matter in different careers or jobs.
	Activity 15	Let your child review the main points in this concept.

LESSON

Activity 1 Can You Explain?



In the previous concept, you have learned about matter and its states.

▶ How is matter described and measured?

- · Matter can be described by its color, shape, texture, or size.
- · We can also describe matter based on its state (solid, liquid or gas).
- We can measure some properties of matter using some tools like :
 - A balance to measure its mass.
 - A ruler to measure its length.
 - A thermometer to measure its temperature.

In this concept, we will study:

- · Describing and measuring matter.
- Properties of matter.
- Measuring matter.
- · Uses of matter.
- Careers and measuring matter.

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Activity 2 A Roof for Every Type of Climate

▶ Look at the following pictures, then put (√) or (x) in front of the following sentences:



Will snow and rain enter this house from the roof?



- ② Can we measure the height of this boy by using tape measure? (
- In this activity we will know some kinds of materials which people use to make roofs of homes and buildings.

A	Material of the roof	Properties of roof material
Desert Home	Made of strong stones.	- It is flat. - It protects the home from dust and dirt.
Cold weather Home	Made of ceramic tiles (ceramic bricks).	- It is slanted (inclined). - It protects the home from rains.
Tropical Rainforest Home	Made of leaves and sticks.	- It is slanted (inclined). - It protects the home from animals getting inside.

stick

Note

The kind of material used to make a roof depends on the climate where the home is located.

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Į	- 1	

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Check your understanding

-0			
Put (√) or (×):			
1. The desert home roof made of	f leaves and sticks.	()
2. Roofs of buildings protect then	n from rain, animals, dust, dirt or other		
things getting inside.		()
3. The tropical rainforest home ha	as flatten roof.	()
Choose the correct answer: 1. The roof of desert home is made	e of		
a. ceramic tiles.	b. leaves and sticks.		
c. strong stones.	d. ceramic bricks.		
2. The kind of material used to m	ake a roof depends on thewh	iere	
the home is located.			
a. height b. climate	c. location d. roof		

material مادة climate مناخ located مناخ 203

Activity 3 What Do you Already know About Describing and Measuring Matter?

 Everything around us is made of matter, Now we will learn about how describing and measuring matter.

Describing Matter

- You already know what is the matter and it could be a solid, a liquid or a gas.
- Matter can be described by its color, shape, odor, texture and size.



Measuring matter

Each property of material can be measured by using a special measuring tool.
 The following table shows some properties of matter and the measuring tool used to measure each of them.

Property Volume		Length		Mass	Temperature
Tools		- man			
-	Measuring cup	Tape Measure	Ruler	Balance	Thermometer

Note

You may need to measure more than one property of material to determine if this material is the right one you can use in a certain purpose or not.



Check your understanding

- ▶ Put each of the following tools in front of its suitable sentence : (Measuring cup – Thermometer – Ruler – Balance)
 - 1. A tool is used to measure the mass of materials.
 - 2. A tool is used to measure the temperature of materials.
 - 3. A tool is used to measure the volume of materials.
 - 4. A tool is used to measure the length of materials.

In the Assessment Book:

(.....)

(.....)

(.....)

Try to answer: Self-Assessment 25

Exercises on Lesson 1

Understand	O Apply	Analyze	● Evaluate	● Create	
1 Chanca the se	wort answer.				
	rrect answer :		*		
	wing can be used		2 · · · · · · · · · · · · · · · · · · ·	911	
a. shape.	b. p	orice. c. co	lor.	d. texture.	
2. We can me	asure the mass o	f a cube of ice by	using a		
a. thermom	eter. b. r	uler. c. me	easuring cup.	d. balance.	
3. Which of the	e following homes	have an inclined	l roofs?		
a. Desert ho	omes only.				
b. Tropical r	ainforest homes	only.			
c. Desert ho	mes and cold we	ather homes.			
d. Tropical r	ainforest homes	and cold weather	homes.		
 4. Homes which 	ch are built in a co	old weather area	have roofs made	up of	
a. ceramic t	iles.	b. str	rong stones.		
c. carton pa	per.	d. lea	d. leaves and sticks.		
🧧 5. You can me	asure the length	of your friend by (using a		
a. thermom	eter.	b. taj	pe measure.		
c. balance.		d. me	easuring cup.		
6. We can ide	ntify milk by deter	mining its	*		
a. color and	texture.	b. sh	ape and odor.		
c. color and	size.	d. co	lor and taste.		
Chanse from	column (B) what s	uite it in column	(A) ·		
Choose from	Column (b) what s	urts it in column	(A).		
Column	(A)	C	olumn (B)		
1. Thermome	ter a. is us	sed to determine	the length of a bo	ok.	
2. Ruler		b. is used to determine the mass of some apples.			
3. Measuring4. Balance	cup c. is us of te		the temperature o	f a hot cup	
	d. is us wate		the volume of an	amount of	
	e. is us	e. is used to determine the shape of a book.			

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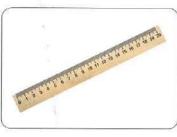
1	Dente	1.1	OR	100	
3	Put	(V)	OI	(4)	

	1. We can describe a solid matter by its color and shape.	()
	2. The roof of tropical rainforest home is made up of leaves and sticks.	()
	3. The roof of desert home is made up of strong stones to protect it from snow	v. ()
0	4. We can measure the volume of an amount of oil by using tape measure	э. ()
0	5. The length of the classroom wall is measured by using a balance.	()
0	6. You can use thermometer to measure the temperature of a hot cup of wate	r. ()
9	7. We can differentiate between sugar and salt by using their color.	()
4	Write the scientific term of each of the following :		
0	1. A material that is used to build the roofs of cold weather homes. ()
0	2. A material that is used to build the roofs of desert homes. ()
0	3. The property of matter which is measured by the measuring cup. ()
0	4. The property of matter which is measured by the balance. ()
•	5. The property of matter which is measured by the tape measure. ()
5	Complete the following sentences :		
0	We can differentiate between ice and water as ice is a state water is a state.	hile	
0	2. The of your school bag can be determined by a balance.		
	3. In the Earth's polar zone, people use in building their home ro protect them from	ofs to)
•	4. We can use different materials to make a roof, depending on thewhere the home is located.		
•	5. You can use a to measure the mass of matter, while you can use to measure its temperature.	use a	
۰	6. You can use a ruler to measure the of your book, while you can a balance to measure its	ın use	Э
6	Give reasons for :		
•	The roof of desert home is made of strong stones.		
	The roof of tropical rainforest home is made of leaves and sticks.		

7 What happens if ...?

The roofs of cold weather homes is flat.

Choose the suitable tool to measure some things found at your classroom (you can choose the same tool more than once):





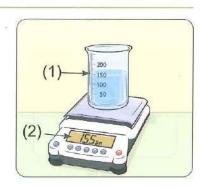


Tool (A)

Tool (B)

Tool (C)

- 1. You can measure the height of your chair by using tool (......)
- 2. You can measure the mass of your copybook by using tool (......)
- 3. You can measure the volume of the water that is found in your bottle by using tool (......)
- 4. You can measure the length of your pencil case by using tool (......)
- 9 From the opposite figure, tool (1) is used to measure of water, while tool (2) is used to measure of tool (1) and water.
 - a. mass length
 - b. volume temperature
 - c. mass volume
 - d. volume mass



- ▶ Look at the following picture, then put (√) or (x) in front of the following sentences:
 - The material of the paper is changed after its burning.
 - Paper has ability to rust.



2.

In this activity we will examine a variety of substances that look alike. All substance in this activity are known, but one of them is unknown. We will use our senses to describe the properties of each substance.

▶ Tools



Sugar



Salt



Flour



Unknown mixture



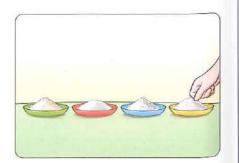
Lens

Note

The unknown mixture is a mixture of two substances found in the materials available to you in this activity.

Steps

 Check (examine) the four plates in front of you and touch all the substances with your hand to feel their textures.

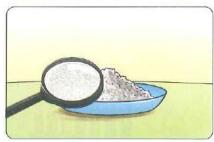


ph

2. Smell all the substances and know the odor of all of them.



Use the lens to observe the shape of crystals of each substance.



Observations

- All substances have the same color.
 The substances have different odors.
- 3. The substances are made up of:
 - · Large crystals as in sugar.
- Small crystals as in salt.
- Very fine particles as in flour.
- A mixture of large crystals and very fine particles as in the unknown mixture.

Note

According to the previous observations we can find out that the unknown mixture is a mixture of sugar and flour.

Conclusion

Color, texture, odor and shape are some of the properties of matter that are called physical properties.



re

Check your understanding

- Complete the following sentences:
 - 1. Color and texture are from the properties of matter.
 - 2. Salt have crystals, while have very fine particles.



Digital Extension Activity

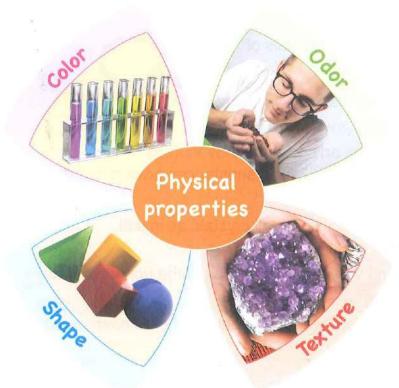
Activity (5) " Shape and Volume of Liquids and Solids " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

Activity 6 Properties of Matter

- · You have learned different ways to describe and measure matter.
- · Now we will learn more ways that matter can be observed and measured.

FIRST Physical properties

· Physical properties of matter are :



Notes

- You can observe the physical properties with your five senses.
- You can use words such as rough, blue, round and sweet to describe the physical properties.

SECOND Chemical properties

Chemical properties of a material can be observed and measured by the changes that happen in this material when it interacts with other materials.

Examples of chemical properties

▶ The ability to burn :

Such as when a paper interact with fire, the paper becomes ash.

▶ The ability to rust :

Such as when an iron nail interact with water and air, the iron nail rusts.





Volume and Mass

Now, let's study volume and mass that are considered important properties of matter.

Volume

It is the amount of space that matter takes up.

The measuring units of volume are:

- Liters (L).
- Milliliters (mL).
- Cubic centimeters (cm3).

1L = 1000 mL = 1000 cm³

Ex.: A big bottle of water contains 1 liters or more.



Mass

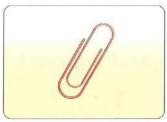
It is a measure of the amount of matter.

The measuring units of mass are:

- Gram (g).
- Kilogram (Kg).

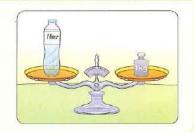
1 Kg = 1000 g

Ex.: A paperclip has a mass about 1 gram.



Note

One liter of water has a mass of 1 kilogram.



Temperature

- In the previous concept you have learned that matter is made up of particles that are in continuous motion.
- Temperature is a measure of how quickly the particles in a matter are moving.

Notes

- 1. Quickly moving particles produces more heat energy than slower moving particles.
- 2. Volume, mass and temperature are properties of matter that you can measure.



Check your understanding

▶ Put (√) or (x):

1. The ability of matter to burn and rust are considered from chemical		
properties of matter.	(

- 2. The measuring units of volume are liters, milliliters and cubic centimeters.
- Quickly moving particles produces less heat energy than slower moving particles.

 (



Digital Extension Activity

Activity 7 "Observable Properties" in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.



Digital Extension Activity

Activity 8 " Does Gas Have Mass " in the school book is an optional digital activity. You can do this activity by scanning its QR code found in your school book.

In the Assessment Book:

Try to answer: Self-Assessment 26

Exercises on Lesson 2

3. The physical property of milk through which you can see it is	
 1. We can differentiate between salt and flour through all the following are physical properties of matter except	Analyze
except the	
c. taste. 2. All the following are physical properties of matter except	d flour through all the following properties
 a. color. b. rusting. c. texture. d. shape 3. The physical property of milk through which you can see it is a. odor. b. texture. c. color. d. taste. 4. Burning of wood is considered as of matter. a. only physical property b. only chemical property c. both physical and chemical properties d. neither physical nor chemical properties 5. When the iron interacts with water and air, it a. becomes ash. b. becomes powder. c. burns. d. rusts. 6. We can measure the volume of a liquid by all the following una. kilogram. b. milliliters. c. cubic centimeters. d. liters. 7. The volume of one liter of water has a mass of	
 3. The physical property of milk through which you can see it is a odor. b. texture. c. color. d. taste. 4. Burning of wood is considered as	ies of matter except
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 4. Burning of wood is considered as of matter. a. only physical property b. only chemical property c. both physical and chemical properties d. neither physical nor chemical properties 5. When the iron interacts with water and air, it	n which you can see it is the of it.
 a. only physical property b. only chemical property c. both physical and chemical properties d. neither physical nor chemical properties 5. When the iron interacts with water and air, it	. color. d. taste.
 b. only chemical property c. both physical and chemical properties d. neither physical nor chemical properties 5. When the iron interacts with water and air, it	of matter.
 c. both physical and chemical properties d. neither physical nor chemical properties 5. When the iron interacts with water and air, it	
 d. neither physical nor chemical properties 5. When the iron interacts with water and air, it	
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 c. burns. d. rusts. 6. We can measure the volume of a liquid by all the following unakilogram. b. milliliters. c. cubic centimeters. d. liters. 7. The volume of one liter of water has a mass of	nd air, it
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 c. cubic centimeters. d. liters. 7. The volume of one liter of water has a mass of	
 7. The volume of one liter of water has a mass of	
 a. one gram. b. one kilogram. c. one milliliter. d. one of section of a liquid is equal the of a. 1 kilogram. b. 1 gram. c. 1 centimeter. d. 1 liter 	
 8. The volume of 1000 cubic centimeters of a liquid is equal the of a. 1 kilogram. b. 1 gram. c. 1 centimeter. d. 1 liter 	
of	
a. 1 kilogram. b. 1 gram. c. 1 centimeter. d. 1 liter	rs of a liquid is equal the same volume
	1 continuotor d 1 liter
9. when particles of matter move quickly they produce more	
a. thermal b. light c. sound d. solar	
 10. All the following properties of matter can be measured by difference of the second second	can be measured by different tools
	. color. d. temperature.

Many No.	Deep	1. 1	-	1000	
	Put	(V)	or	(A)	3
Charles of the last		1.	_	1 - 1	

0	Salt and sugar have the same color and odor.	()
9	2. We can differentiate between sugar and flour by texture only.	()

- 3. Shape is one of chemical properties of matter.
 (
- 4. Burning of fuel is considered from chemical properties of fuel.
- 5. All physical properties of matter can be measured.
- 6. When we put an iron nail in water and then leave it in air, it will rust.
- 7. 1 kilogram of water has a volume equals 1000 milliliters.
- 8. The temperature increases by increasing the speed of moving particles of a matter.

3 Write the scientific term of each of the following:

- 2. The properties of matter which can be observed and measured by the changes that happen when the material interacts with other materials.

 (......)
- 3. It is the amount of space that matter takes up.
- 4. It is a measure of the amount of matter.
 (......)
- 5. It is a measure of how quickly the particles in a matter are moving. (......)

4 Complete the following sentences by using the words below:

(one thousand – chemical – temperature – mass – physical – rough – odor)

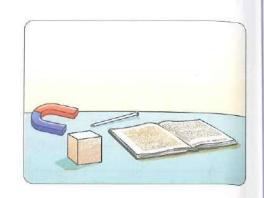
- 1. Both of odor and texture of matter are considered from the properties
 of matter.
- 2. You can identify the of a juice by using the sense of smell.
- 3. We can describe the texture of sugar crystals by saying "it has crystal texture".
- 4. The ability of a piece of iron to rust is from the properties of matter.
- 5. The volume of 1 liter of water has a of 1 kilogram.
- 6. The mass of 1 kilogram of apple equals the mass of pieces of paper clip.
- 7. By decreasing the speed of particles of a matter its will decrease.

5	Give reasons for :	
0	1. Rusting of iron is considered from chemical propertie	es of matter.
0	2. When the particles of a matter move quickly, its temp	perature increases.
6	What happens if ?	
0	1. A piece of paper interact with fire.	
	2. The speed of particles of a matter decreases. (ac	ccording to its temperature).
7	Put letter (P) in front of physical properties and letter	(C) in front of chemical
0	properties of the different matter below:	
	1. The white color of milk.	()
	2. The ash produced from burning a paper.	()
	3. The large crystals of salt particles.	()
	4. The odor of perfume.	()
	5. The rusting of a piece of iron.	()
	6. The sweet taste of sugar.	()
	7. The round shape of a ball.	()

LESSON

Activity 9 Measuring Properties

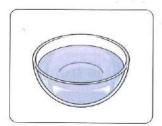
- ▶ Look at the following picture, then choose the correct answer:
 - Which material will be attracted to the magnet? (Wood - Iron nail - Book)



2.

- · You have learned the properties of matter and how to describe and measure it.
- In this activity we will measure different physical properties of matter.

▶ Tools



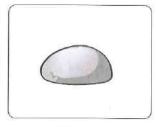
Basin containing water



Magnet



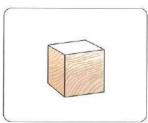
Balance



Stone



Iron nail



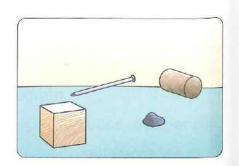
Piece of wood



Piece of cork

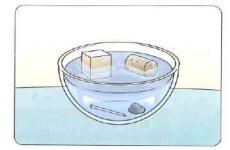
Steps

1. Hold the magnet near to each of the previous substances, and observe what substances are attracted to the magnet.



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- Measure the mass of each substance by using the balance.
- Put all substances in the basin that contains water to observe which materials will float and which will sink.



4. Record your results in the following table.

Observations The table of observation :

Substance Property	Stone	Iron nail	Piece of wood	Piece of cork
Attracted to magnet or not	Not attracted	Attracted	Not attracted	Not attracted
Mass (g)	50	30	100	20
Sink or float	Sinks	Sinks	Floats	Floats

Conclusions

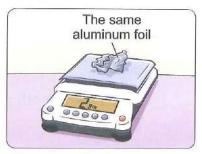
- Some substances are attracted to the magnet and some other substances are not attracted to the magnet.
- Floating and sinking of substances don't depend on their masses.

Does the shape and size affect the mass of material?

The shape of material

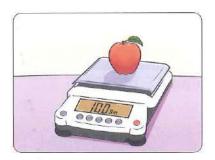
Changing the shape of material doesn't affect its mass.

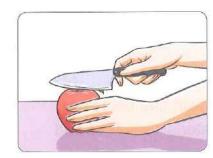


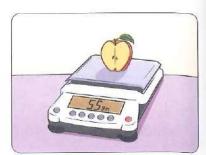


2 The size of material

If you cut an apple in two half and measure the mass of one half, the mass would be nearly half the mass of the original apple.









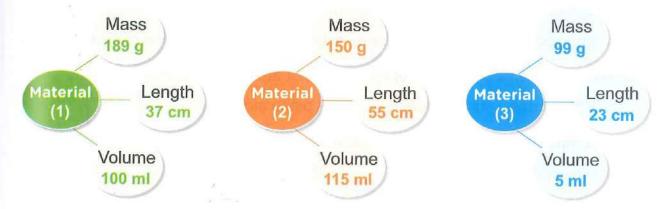
Check your understanding

▶ Put (√) or (x):

All substances are attracted to the magnet.
 Heavier objects will sink in water and lighter objects will float on water.
 Changing the shape of material doesn't affect its mass.
 Floating and sinking of substances don't depend on their masses.

Activity 10 Measuring Matter

- You have learned alot about using measurements to compare materials and properties of matter.
- In this activity you will apply what you have learned about measuring matter.
 - In front of you three materials, observe the data of each of them to compare between their properties.



- Based on the previous data we can conclude that :
 - Material (1) has the biggest mass although it doesn't have the largest volume.
 - Material (2) has the largest volume although it doesn't have the biggest mass.
 - · Material (2) is the longest one.

ld

Check your understanding

▶ Based on the data in the table, choose the correct answer :

Material	Mass (g)	Volume (mL)
Plastic ruler	30	115
Iron cube	200	20

- 1. The plastic ruler contain matter then iron cube.
 - a. more

b. equal

- c. less
- 2. Iron cube takes up space than the plastic ruler.
 - a. more

b. equal

c. less

In the Assessment Book:

Try to answer:
Self-Assessment 27

Exercises on Lesson 3

•	Understand	○ Apply	Analyze	● Evaluate (Create	
1	Choose the corre	ct answer :				
0	1. Which of the fol	llowing matter is a	ttracted to the mag	net ?		
	a. Ice cube.	b. Paper clip.	c. Woody spoon	. d. Plastic ruler.		
6	2. Which of the fol	llowing matter floa	ts on the surface o	of water ?		
	a. Iron spoon.	b. Piece of stone	e. c. Iron nail.	d. Piece of cork.		
0	3. Which of the fo	llowing matter sink	s and not attracts	to the magnet ?		
	a. Wood cube.	b. Iron nail.	c. A piece stone.	d. Plastic cup.		
0	4. The mass of an	orange will chang	ge if we change its			
	a. size only.		b. shape only.			
	c. size and sha	pe.	d. color and sha	pe.		
0	5. If we cut a tomathalf.	ato into two halfs,	the of one ha	alf of tomato will de	crease	to to
	a. color	b. mass	c. temperature	d. shape		
	6. A one kilogram	of tomato is differ	from one kilogram	of wood in the		
	a. volume only.		b. mass only.	E		
	c. volume and r	nass.	d. color and mas	ss.		
2	Put () or (X) :					
0	1. Iron spoon is at	tracted to the mag	gnet.		()
0	2. Iron nail is attra	cted to the magne	et and floats on the	surface of water.	()
0	3. If we put a woo	d cube in water it	will float.		()
0	4. If we cut an app	ole into 4 pieces, t	he mass of each p	iece is less than		
	the mass of wh	ole apple.			()
	5. If the masses o	f two different mat	erials are equal, s	o their volume mus	it	
	be equal.				()
	6. The mass of iro	on bar its volume e	equals 50 cm ³ is di	ffer from the mass	of	
	wood bar has th	ne same volume.			()

E	Complete the following sentences using the words below:						
	(mass – iron – attracted – doesn't attract – cotton – floats – sinks)						
0	 1. A spoon of wood to the magnet and on the surface of water. 						
0	o 2. An iron ruler in water, and to the magnet.						
6	3. If you eat a small piece from a banana, so the of the remained piece						
	of banana will decrease.						
	4. If an iron cube and an amount of cotton have the same mass, so the volume of						
	is smaller than that of the						
4	What happens if ?						
	1. A magnet is put close to an iron nail and a plastic spoon.						
	2. A piece of cork is put in water.						
5	Look at the following figures, then choose the correct answer:						
•							
	C Slon						
	Material (A) Iron cube Material (B) Piece of cork						
	Material has the largest volume.						
	(A – B)						
	2. Material has the largest mass.						
	(A – B)						
	3. Materialis attracted to the magnet.						
	(A – B)						
	4. Material floats on the surface of water.						

(A - B)

e to

)

LESSON

Activity 11 Useful Properties of Matter

- ▶ Look at the following picture, then put (√) or (x):
 - 1. Cooking pans are made up of copper.
 - 2. Handles of cooking pans are made up of wood or plastic.



In this activity we will learn about the useful properties of some materials.

Helium

Properties of helium

Physical properties

It is a light gas which means it is lighter than air.

Chemical properties

- It is not poisonous.
- It is not flammable (A flammable) material means that this material burns and form fire).

Uses of helium

It is used to fill balloons



It is used to fill blimps



Give reason for:

Balloons and blimps filled with helium always rise up in the air. Because the helium is lighter than air.



As helium is not flammable or poisonous, so it is a gas that can be used safely.

Co

Ph

cop

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Copper

Physical properties

- · It can be stretched into thin, flexible wires.
- It conducts electricity well (good conductor of electricity).
- · It conducts heat well (good conductor of heat).

Conduction:

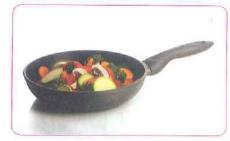
The ability of material to transfer heat and conduct electricity.

Uses of copper

It is used in making electrical wires



It is used in making cooking pans



Give reason for:

Electric wires are made up of copper.

Because copper is a good conductor of electricity and can be stretched into a thin, flexible wire.

Note

Wood and plastic are bad conductors of heat so, they can be used in making handles of cooking pans.



Check your understanding

▶ Look at the following figures, then answer the questions :



Figure (a)



Figure (b)

- 1. In which figure the hand will feel heat.
- 2. The cooking pan is made up of

(Figure (a) – Figure (b))

(wood - copper)

Activity 12 Uses of Matter

- You have learned alot about the properties of a materials.
 Now, we will learn about some uses of some other matter.
- ▶ The following table shows some uses of some matter and its properties.

Types of Matter	Uses (p	urpose)	Property
Steel	Screwdrivers Hammers Windows Eyeglasses		Hard. Strong.
Glass			Transparent.Smooth.
Rubber	Tires	Gloves	Water proof.Flexible.
	Athletic	c shoes	



Check your understanding

- ▶ Complete the following sentences :
 - 1. Among the properties of rubber are water proof and
 - 2. Hammers are made up of

In the Assessment Book:

Try to answer: Self-Assessment 28

Exercises on Lesson 4

Understand	OApply	Analyze	● Evaluate	● Create
1 Choose the correct answer:				
 1. Helium is lighter than air, this property is considered as				
2. When youa. burn.	ou put a lighting match b. not burn.	close to helium gas	, it will d. freeze.	
a. oxyge	re filled with to in gas pheric air	rise up in the air. b. carbon dioxid d. helium gas	de gas	
figure, you a. good o b. bad co c. good o	uch the end of the cop ou will feel hot becaus conductor of electricity anductor of electricity. conductor of heat.	e copper is		Copper
 5. All the following are from physical properties of copper, except that				
	use copper to make es of cooking pans. 		ing pans.	
 7. Steel is u a. flexible 	used in making hamme e. b. smooth.		 <mark>d</mark> . transpare	ent.
 8. Glass is transparent, so it can be used in making a. eyeglasses. b. tires. c. screwdrivers. d. gloves. 				
 9. Rubber is a. athletic c. tires. 	s used to make all the c shoes.	following, except b. gloves. d. windows.		

Understand
 Apply
 Analyze

2 Choose from column (A) what suits it in both columns (B) and (C):

-	enouse mont colum	ii (A) What saits it iii both co	idinio (b) dila (c) .			
0	(A)	(B)	(C)			
Matter It is used to Bec						
	1. Copper	a. make eyeglasses.	A. strong.			
	2. Helium	of electricity.				
	3. Rubber					
	4. Glass d. fill balloons. D. lighter than air.					
	5. Steel	e. make electrical wires.	E. flexible.			
	1					
3	Put () or (x):					
0	1. From the chemica	al properties of helium is that	it is not flammable.	(
9		nat can be used safely, becau		(
	3. When a balloon is	filled with helium, it will fall do	own on the ground.	(
		making cooking pans becau	5 5 3 253	(
	Handles of cooking are bad conductor	ng pans are made of wood or r of heat.	plastic because the	y ()		
9		naking windows, because the	e glass is a transpare	ent		
	material.			(
9	7. Rubber is very ha	rd, so it is used in making atl	nletic shoes.	(
9	8. Hammers must be	e very strong, so they are ma	de of steel.	(
4	Write the scientific	term of each of the followin	g :			
9	1. It is a light gas wh	ich is used in filling blimps.		()		
•	2. The ability of mate	erial to transfer heat and con-	duct electricity.	(
9	3. A matter which is	used in making gloves becau	ise it is waterproof	•		
	and flexible.		•	()		
5	Complete the follow	ving sentences:				
	1. Helium is not flam	mable, this property is consi	dered asp	roperty.		
•	2. We can use	gas to fill blimps, because	se it is lighter than			
		, so it is co				
		per to be stretched, is from				
	5. Cooking pans car	n be made of copper because lectrical wires can be made o	it is good conducto	r of		

	6. The body of can be made from copper, while its handles is made from or plastic.
	7. We can use in making hammers because it is and
	8. As is a waterproof material, we can use it in making gloves. 9. Glass is used in making windows and eyeglasses, because glass is
6	Give reasons for:
•	Helium is used to fill balloons and blimps.
•	2. Human can use helium gas safely.
•	3. Wood and plastic are used in making handles of cooking pans.
7	What happens if ?
0	
	A blimp is filled with helium gas.
	2. Electrical wire is made from plastic instead of copper.
8	Look at the following figures, then choose the suitable material which is used in making this tools using the words below:
	(Rubber – Copper – Glass – Helium – Steel)
	1

5

Activity 13 Record Evidence Like A Scientist

- In this concept, you have learned a lot about matter and how describing and measuring it.
- Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in the previous concepts.

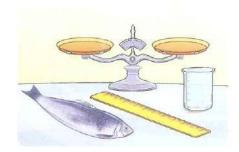
Step 1 The Question
How is matter described and measured ?
Step 2 My Claim
Step 3 My Evidence
Step 4 My Scientific Explanation

Activity 14 S T E M in Action

▶ Look at the following picture, then answer the question:

To measure the length of this fish we can use

(ruler - balance - measuring cup)



Careers and Measuring Matter

- You have learned in the previous lessons how to measure some different materials.
- In this activity we will learn about the importance of measuring matter in different careers or jobs.

Architects and builders

- They carefully measure materials when building homes and schools because they must know correct lengths and widths of boards before building walls.
- Knowing the properties of materials and the correct measurements help architects and builders to build up safe buildings.



Bakers

Bakers must measure the volume and mass of ingredients before start baking.



Example:

If too much or too little baking powder is used in baking a cake, the bakers could not make a good cake.



Scientists

Scientists often measure matter during their researches.

- The following table shows some measurements that different scientists do :

Paleontologists	Space scientists	Marine biologists
Measure the size and shape of fossils.	Measure the mass of planets and stars.	Measure the speed of sound produced from animals such as whales and dolphins.



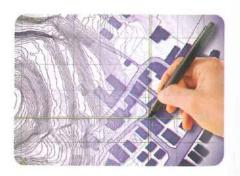
Scientists must use accurate measurements when they do experiments or researches.

Cartographers

- They are responsible for measuring and mapping Earth's surface.
- Maps can give us information about climate and topography (that studies mountains, lands, seas, oceans, ... etc. on the Earth's surface).

The role of cartographers:

 They create city maps to help tourists find their way.





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- 2. They use information and photos from satellites to create maps of :
 - · The Earth's surface



· The moon's craters



3. They create marine charts to guide ships through dangerous water.





Check your understanding

- ▶ Put (√) or (x):
 - 1. Architects and builders don't measure materials when they build homes.
- 2. Paleontologists measure the size and shape of fossils.
- 3. Biologists develop city maps to help tourists find their way.

In the Assessment Book:

Try to answer:

- Self-Assessment (29)
- Model Exam on Concepts (2.1 & 2.2)

Activity 15 Review: Describing and Measuring Matter

▶ We can summarize this concept in the following main points :

- · Desert home is made of strong stones.
- · Cold weather home is made of ceramic tiles.
- · Tropical rainforest home is made of leaves and sticks.
- Matter can be described by its color, shape, odor, texture and size.
- · Measuring cup is used to measure the volume of matter.
- Ruler and tape measure are used to measure the length of matter.
- · Balance is used to measure the mass of matter.
- Thermometer is used to measure the temperature of matter.
- Physical properties of matter are :
 - Color
- Shape
- Odor
- Texture

- Chemical properties of matter are :
 - · The ability to burn.

The ability to rust.

Volume:

It is the amount of space that matter takes up.

Mass:

It is a measure of the amount of matter.

- Floating and sinking of substances don't depend on its mass.
- · Changing the shape of material doesn't affect its mass.

Helium is used to fill balloons and fill blimps.

Copper is used in making electrical wires and cooking pans.

Conduction:

The ability of material to transfer heat and conduct electricity.

- Wood and plastic are bad conductors of heat so, they can be used in making handles of cooking pans.
- Scientists must use accurate measurements when they do experiments or researches.

Exercises on Lesson 5

0	Uno	lerstand OApply	Analyze	Evaluate	Create	b.
1 Choose the correct answer :						
	Architects and builders use the to measure the length of walls in buildings.					
	1.	a. balance			ullain	gs.
		c. measuring cup	b. tape measurd. thermometer			
	0					
	2.	Before making a cake we must m				
		a. mass and volume	b. mass and ter			
		c. volume and length	d. mass and ler			
	3.	Scientists which measure the size	and shape of for	ssils during their rese	arch	
		are	h oppos soisuti	ioto		
		a. cartographers.	b. space scienti			
		c. marine biologists.	d. paleontologis			
	4.	The scientists who measure the n				
		a. marine biologists.	b. paleontologis			
		c. space scientists.	d. cartographer	S.		
9	5.	We can use the to measure the			ite ca	ke.
		a. ruler b. balance	c. measuring cu	up d. tape measure		
•	6.	Marine biologists measure different speed of produced from wh			the	
		a. light b. movement	c. sound	d. wind		
	7.	Cartographers create to hel	p ships find their	way through water.		
		a. city maps	b. marine charts	3		
		c. mountain maps	d. desert maps			
2	P	ut (v) or (x) :				
Ì			T. H.P.	restata di Santana		
1	1.	Architects measure the length of s	some building ma	terials during	1	1
	0	building a school.	a massa of flour b	ofour moline broad	()
Ĭ		Bakers use balance to measure the			()
	٥.	The scientists who measure the size marine biologists.	ze and snape of fo	ossiis are	()

6 Look at the following figures, then choose the correct answer:

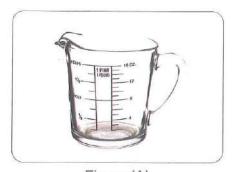


Figure (A)



Figure (B)

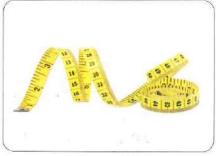


Figure (C)



Figure (D)

1. The tool in figure (A) is used by

(architects - builders - bakers)

2. The mass of mars planet in figure (B) is measured by

(paleontologists - space scientists - marine biologists)

3. The tool in figure (C) is used by

(builders - cartographers - bakers)

4. The map in figure (D) is made by

(paleontologists - builders - cartographers)

Model Exam on Concept (2.2)

Total mark

20

	(A) Choose the correct answer:	(5 marks)
	1. All the following are physical prope	rties of matter, except
	a. color. b. rusting.	c. texture. d. shape.
	2. Homes which are built in a cold we	ather area have roofs made up of
	a. ceramic tiles.	b. strong stones.
	c. carton paper.	d. leaves and sticks.
	are	and shape of fossils during their research
	a. cartographers.	b. space scientists.
	c. marine biologists.	d. paleontologists.
	4. The mass of an orange will change	if we change its
	a. size only.	b. shape only.
	c. size and shape.	d. color and shape.
	(B) Give a reason for the following:	
	Human can use helium gas safely	·
		······································
Die of	(A) Complete the following sentence	s using the words below: (5 marks)
	(temperature – ch	emical – climate – mass)
	1. Heluim is not flammable, this prope	erty is considered as property.
	2. By decreasing the speed of particle	es of a matter its will decrease.
		nake a roof, depending on the
	 If you eat a small piece from a bank of banana will decrease. 	ana, so the of the remained piece
	(B) Write the scientific term of each	of the following :
	1. They are responsible for measuring	and mapping Earth's surface. ()
	2. The properties of matter which you	can observe them by using your five
	senses	1

3 (A) Pu	it (V) or (X):		(5 marks)
1. Rub	ber is very	hard, so it is us	ed in making athletic shoes.	()
2. 1 Ki	ilogram of	water has a volu	me equals 1000 milliliters.	()
3. The	scientists	who measure th	e speed of dolphin sound u	nder the sea surface
are	paleontolo	gists.		()
4. You	can use th	nermometer to m	easure the temperature of	
a ho	ot cup of te	a.		()
(B) Wh	nat happen	s if ?		
Ar	nagnet is p	out close to an iro	on nail and a plastic spoon.	
*****	ļ			
4 (A) Ch	oose from	column (B) wha	t suits it in column (A) :	(5 marks)
	(A)	5	(B)	
1. The	ermometer	a. is used to	determine the length of a b	ook.

(A)	(B)
1. Thermometer	a. is used to determine the length of a book.
2. Ruler	b. is used to determine the mass of some apples.
3. Measuring cup	c. is used to determine the temperature of some ice cubes.
	d. is used to determine the volume of an amount of water.
4. Balance	e. is used to determine the shape of a book.

1	2	3	1
The commence of the property of the commence o	SWINGERSON OF MANAGEMENT		4

(B) Look at the following figures, then write the suitable material which is used in making this tools:



1.



2.

Concept

Comparing 2.3 Changes in Matter





Learning outcomes

By the end of this concept, your child will be able to:

- Explain the relationship between changes in temperature, states of matter and mass.
- Identify the causes of changes in the physical and chemical properties of matter.
- Investigate what happens when two or more substances are mixed.
- Classify mixtures and compounds based on what happens when they are combined.

Key vocabulary

- Chemical change
- Energy
- Chemical properties
- Friction
- Compound
- Heat
- Physical change
- Light
- Thermal energy
- Melt
- Water vapor
- Mixture

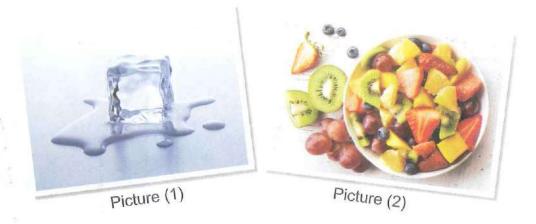
Notes For Parents On Concept [2.3]

Lessons	Activities	What you should do with your child
Salar In	Activity 1	Explain to your child what happens to the mass of a matter when it is heated, cooled or mixed with other substances.
4	Activity 2	Discuss with your child about the meaning of melting matter.
1	Activity 3	Let your child think about how to differentiate between the states of matter.
9	Activity 4	Explain to your child how the motion of the particles of a matter is related to the thermal energy of this matter.
	Activity 5	Explain to your child how gaining or releasing energy affects on the states of matter.
2	Activity 6	Discuss with your child that the temperature of the matter affects on the state of the matter.
	Activity 7	Explain to your child how changing of states of matter happens.
3	Activity 8	Let your child think about the meaning of the mixtures and some examples of mixtures.
	Activity 9	Discuss with your child about the difference between mixture and compound.
4	Activity 10	Explain to your child how the masses of substances do not change after mixing with other substances even if there are changes in their properties.
	Activity 11	Let your child think about the properties of mixtures.
5	Activity 12	Let your child think about the meaning of the physical changes and some examples of the physical changes.
	Activity 13	Discuss with your child the meaning of the chemical changes and some examples of the chemical changes.
	Activity 14	Explain to your child how chemical changes affect the substances producing new substances with new properties.
6	Activity 15	Explain to your child that we can differentiate between chemical and physical changes using some evidences.
	Activity 16	Help your child to think like a scientist by answering a question about one of the main points of this concept then write his/her claim, evidence and the scientific explanation.
7	Activity 17	Let your child think about how important the desalination is and how it helps people to survive.
1	Activity 18	Let your child review the main points in this concept.

LESSON

1

Activity 1 Can You Explain?



- In the previous concepts, you have learned that there are different states of matter and each matter takes up space and has mass.
- · Also, you have learned that each matter has its own physical and chemical properties.
- The pictures above show that matter can be changed to different states as in picture (1) and matter can be mixed with other matter.

▶ What happens to the mass of a matter when it is heated, cooled or mixed with other substances ?

- The mass of any matter does not change when it is heated, cooled or mixed with other matter such as :
 - In picture (1), when ice cubes is heated and changed to water, the mass does not change.
 - In picture (2), the mass of any of the fruits before mixing with other fruits is the same after mixing with other fruits.

In this concept, we will study:

- · Temperature and state of matter.
- Mixtures.

of

- Properties of mixtures.
- · Physical changes in our lives.
- · Chemical changes.

mixture beated مُسخن cooled خليط 241

Activity 2 Melting Matter

Put the suitable word from those between brackets under the suitable picture:

(Liquid - Gas - Solid)







..... state

..... state

- Water is a matter that can be found in the three states of matter which are solid, liquid and gas state.
- Imagine that you forget a bowl contains ice cubes in a hot place, you will find water in the bowl instead of ice cubes. That means the ice melts and it is turned into water.

Melting:

It is a process in which a matter is changed from solid to liquid state when its temperature increases (by heating).





Note

Solid matter should be kept below certain temperature to stay in solid state.



Check your understanding

Complete:

- 1. Ice is the state of water.
- 2. Melting is the change of matter from _____ state to ____ state by heating.

▶ Put (√) or (x):

- Water vapor is the solid state of water.
- 2. When water melts, it is changed from liquid state to solid state.

Activity 3 What Do You Already Know About Changes To Matter

 Matter can be found in solid, liquid or gas state which we can differentiate between them by identifying their properties such as:

Solids



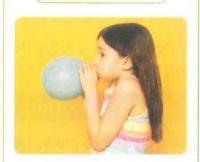
- They have definite volumes.
- They have definite shapes.
- They are hard.

Liquids



- They have definite volumes.
- They don't have definite shapes but they take the shapes of their containers.

Gases



- They don't have definite volumes but they take the volume of their containers.
- They don't have definite shapes but they take the shapes of their containers.
- Matter can be changed from one state to another without any change in its amount so there is no change in the total number of particles of the matter during the change of the state of matter.

- NO - CO

Check your understanding

▶ Choose :

- 1. During the change of the state of matter, the amount of the matter.....
 - a. increases.
- b. decreases.
- c. stays the same.
- 2. When a liquid matter is changed to a gas, the total number of its particles
 - a. does not change.
- b. decreases.
- c. increases.
- 3. The ice cubes are solid because they
 - a. are hard.
 - b. don't have definite volumes.
 - c. don't have definite shapes.

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Activity 4 Particles

Thermal energy

- Thermal energy is not a physical thing (material) but it is an energy in the form of heat.
- We use thermal energy every day in many things. such as cooking food and warming homes.
- The thermal energy from the Sun keeps living things on the Earth alive.



Particles in motion

- Any matter is made up of very small particles.
- Particles in matter are always in motion state even in solids that their particles are close together.
- Particles in matter have energy that make them able to move, vibrate and spin around.
- When particles of a matter absorb more thermal energy, they move, vibrate and spin around faster that causes this matter becomes warmer.



Notes

- 1. When particles are cooled down, particles move slower and come close together.
- 2. When particles are warmed, they move faster and spread out.
- 3. Light energy is like thermal energy when particles of a matter absorb them, particles move, vibrate and spin faster.

Check your understanding

▶ Put (√) or (x):

- Thermal energy is a matter.
- 2. Particles in solid are not moving.
- 3. When particles are warmed, they move slower and come close together. (When particles absorb thermal energy, they move faster and spread out. (

In the Assessment Book:

Try to answer: Self-Assessment (30)

physical thing	
warmer	
vibrate	
spread	

motion state come close absorb

حالة حركة

spin light energy

يدور طاقة ضوئية

Exercises on Lesson 1

6	Unde	erstand	Apply	Analyze	Evaluate	
	Ch	oose the correc	t answer :			
	1.	When ice melts,	, it turns from	. state to sta	te.	
		a. liquid – solid	b. solid – liquid	c. liquid – gas	d. solid – gas	
6	2.	When ice kept in	n a cold temperatu	ıre, it		
		a. turns into wat	er.	b. turns into stea	m.	
		c. remains as it i	is.	d. becomes uncl	ear.	
•	3.	lce can turn into	water by			
		a. cooling.	b. freezing.	c. rusting.	d. heating.	
0	4.	Which of the foll	lowing matter has	a definite volume	and shape ?	
		a. Water.	b. Milk.	c. Ice.	d. Air.	
		Which of the foll volume?	owing matter take	s the shape of cor	ntainer but has a definite	
		a. Milk.	b. Ruler.	c. Water vapour.	d. Apple.	
•	6.	Which of the foll	owing matter takes	s the shape and th	e volume of the container	?
	9				*	
	ě	a. Water.	b. Juice.	c. Ice.	d. Water vapour.	
٠	7. \	When the water	is heated, its parti	cles		
	3	a. move slower.		b. move faster.		
	(c. move with the	same speed.	d. do not move.		
•	8. /	All the following	happen to the par	ticles of oil when i	t is cooled, except that	
	t	they				
	á	a. move slower.	b. move faster.	c. vibrate less.	d. come close together.	
۰	9. \	When we heat a	liquid, the distanc	e between its part	icles will	
	á	a. decrease.		b. increase.		
	(not be affected	d.	d. become zero.		
	10.	Which of the foll	lowing matter its p	articles are very c	lose together?	
	8	Oxygen gas.	b. Water.	c. Oil.	d. Wood.	

Choose from columns (B) what suits it in column (A):

(A)	(B)
1. Oxygen gas	a. has a definite volume and shape.
2. Oil	b. has a definite shape, but it doesn't have
3. A piece of rock	a definite volume.
	c. has a definite volume, but it doesn't have a definite shape.
*	d. doesn't have a definite volume and shape.

1	2	2
I	۷	٥

	Dest	()	-	100	
10 10	Put		635		
		()	01	100	

4	1. The mass of an amount of apple juice will change if we mix it with water.	()
9	2. The mass of some pieces of ice will be the same when they are melted.	()
0	3. An ice cream turns into liquid by cooling.	()
•	4. If we increase the temperature of some pieces of ice, they will melt.	()
3	5. Water is considered as a liquid matter because it has definite shape and		
50	volume.	()
9	6. Carbon dioxide gas doesn't have definite shape and volume.	()
	7. When particles of a matter absorb thermal energy, they move slower.	()
	8. If a matter absorbs light energy, its particles vibrate and move faster.	()
	9. Particles of solid matter are spread out from each other.	()

4 Write the scientific term of each of the following:

0	1. It is a process by which a matter is changed from solid to liquid state.	()
	2. The state of matter in which matter has definite volume and shape.	()
	3. The state of matter in which matter has definite volume and takes	
	the shape of its container.	()
	4. The state of matter in which matter takes the volume and the shape	of its

container.

5 Complete the following sentences:

- 1. When we heat an ice cream, it and becomes liquid.
- 2. Melting process occurred by the temperature of the matter.
- 3. When we keep some of ice cubes in a low temperature, they don't
- 4. When ice is melted, it is changed from state to state.
- 5. Iron is a state of matter that has definite and

•	6. The state of matter which has definite volume and take the shape of container		
	is the state of matter.		
0	7. Air is considered as an example of state, because it takes the and the of container.		
	8. The distance between particles of solid matter is very		
	9. When an amount of a liquid is heated, the speed of its particles will		
6	Give reasons for the following:		
0	Ice is turned into water when it is placed in a warm room.		
0	2. Juice is considered as a liquid state of matter.		
	3. Air doesn't have a definite volume or shape.		
-			
	What happens if ?		
	We cool some of tomatoes. (according to their masses).		
	2. We increase the temperature of some ice cubes.		
	3. We heat an amount of water. (according to the motion of particles).		
ŏ	Look at the following pictures, then complete the following sentences:		
	Picture (1) Picture (2) Picture (3)		
	1. Picture () is considered as a solid matter because		
	2. Picture () is considered as liquid matter because		
	3. Picture () is considered as gas matter because		
	4 Picture () Melting picture ()		

Process

LESSON

2

Activity 5 Changing States of Matter

▶ Put (√) or (x):

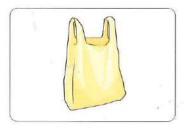
1. Matter cannot be changed from one state to another.

()

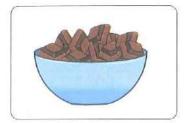
2. When heating ice cubes, they will melt.

- ()
- In the following experience, you can see that matter can change its state due to change in its temperature.

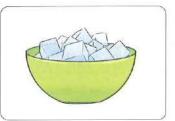
▶ Tools



Plastic bag



Small pieces of chocolate



Ice cubes in a bowl

Steps

 Put the small pieces of chocolate in the plastic bag and close the bag.



2. Put the plastic bag in the Sun rays for 15 minutes, then notice what happen to the chocolate pieces.



Observations

- The chocolate pieces are changed from solid state to liquid state.
- The small pieces are changed to liquid state faster than the big pieces.

3. After the chocolate melts, put the plastic bag on the bowl of ice cubes for about 20 minutes and notice what happens to the chocolate.



Observation

The liquid chocolate is changed to a piece of solid chocolate.

Conclusion

Matter can be changed from one state to another by changing its temperature where :

- When a solid matter is heated up, it is changed to liquid matter.
- When a liquid matter is cooled, it is changed to solid matter.

Note

Each matter has thermal energy and when the thermal energy changes, it affects the state of the matter where the matter can be changed from one state to another by gaining (taking) or releasing (losing) energy.

Check your understanding

-	. /			
Put	(1/)	OF	(w)	
LUL	(,		(0)	

- 1. When solid matter are heated up, they are changed to liquid matter. ()
- 2. The thermal energy affects the state of matter. ()

Activity 6 Temperature And State of Matter

 You have learned that the temperature is a measure of how quickly the particles in a substance are moving.

So, the temperature measures how much energy the particles in a substance have.

Physical change:

It is a change in matter without any change in its structure (makeup).

Example: When melting chocolate, its taste, color and smell don't change.

 Physical changes are usually reversible such as melting is the reverse process of freezing.

Temperature and states of matter

- Changes of states of matter are often effected by the changes in temperature of matter which cause changes in energy of particles of that matter.
- In melting process, the particles of a solid matter gain energy and they move around more and their temperature increases so, the matter changes to liquid.



In freezing process, the particles of a liquid matter release energy and they move slower and their temperature decrease so, matter changes to solid.

Example:

- When the temperature of solid water increases above 0°C, its particles gain energy and they move around more so, solid water changes to liquid water.
- When the temperature of liquid water decreases below 0°C, its particles release energy and they move slower so, liquid water changes to solid water.



quickly
increase
below

Notes

- 1. 0°C is known as the freezing point of water.
- 2. (°C) is the measuring unit of temperature.



Check your understanding

▶ Complete :

- 1. In freezing process, the particles of a liquid release energy and their temperature
- 2. The changes in matter that do not change the structure of the substance are called _____ changes.

▶ Put (∨) or (x):

- 1. The temperature of matter does not affect the state of matter. ()
- 2. In melting process, the particles of a liquid matter gain energy. ()

In the Assessment Book:

Try to answer : Self-Assessment 31

Exercises on Lesson 2

	Understand	O Apply	Analyze	● Evaluate (Create	
1	Choose the correct	ct answer :				
	1. Freezing of liqui	id chocolate need:	s temperatur	e.		
	a. high	b. low	c. warm	d. very high		
•	2. When ice cubes	gain energy	y, they turn into wa	iter.		
	a. sound	b. potential	c. electrical	d. thermal		
0	3. Physical change	es of matter includ	e			
	a. melting only.		b. freezing only.			
	c. both melting a	and freezing.	d. neither melting	g nor freezing.		
	4. Increasing the to	emperature of a m	atter means that i	ts particles		
	a. have low ene	rgy.	b. have high ene	ergy.		
	c. have very low	energy.	d. don't have en	ergy.		
	5. The reversible of	hanges of matter	are usually			
	a. physical chan	iges only.				
	b. chemical chai	nges only.				
	c. both physical	and chemical cha	nges.			
	d. neither chemi	ical nor physical cl	hanges.	*		
	6. In freezing proce	ess, the particles	of matter lose ener	gy and		
	a. move with hig	jh speed.	b. move with ver	y high speed.		
	c. move with low	v speed.	d. don't move.			
	7. Ice is turned into	when its te	mperature is betw	een 0°C and 100°C	Э.	
	a. solid state	b. liquid state	c. gas state	d. water state		
٥	8. When the tempe	rature of water is o	decreased below 0°	°C, it will be turned	into	****
	a. water vapor.	b. clear water.	c. colored water.	d. ice.		
2	Put (\(\sigma \) or (\(X \) :					
	1. When ice is hea	ted, it will freeze.			()
•	2. When a solid ma	atter gains therma	I energy, it will cha	inge into liquid stat	e. ()
	3. Freezing takes p	olace by cooling, v	vhile melting takes	place by heating.	()
9	4. Increasing temp	erature means tha	at particles of matt	er have low		
	thermal energy				1)

 5. Melting and freezing are reversible processes. 	()
6. When the particles of matter move with high speed, its temperature	÷
will decrease.	()
 7. Water remains liquid between 0°C and 100°C. 	()
 8. Freezing means that matter changes from solid state to liquid state 	. ()
3 Write the scientific term of each of the following:	
 1. They are changes in matter which are usually reversible and 	
don't affect its structure.	()
2. It is the process by which the particles of matter gain energy	
and changes from solid to liquid state.	()
3. It is the process by which the particles of matter lose energy	
and changes from liquid to solid state.	()
 4. The state of water when its temperature is between 0°C 	
and 100°C.	()
4 Complete the following sentences by using the words below:	
(freezing – increase – water – temperature – decrease – particles	- melting)
 1. When a chocolate cube is exposed to sun rays, its temperature will and it will become liquid. 	
 2. Matter can be changed from one state to another by changing its 	*************
 3. When we put a bottle containing water in freezer its temperature wi and becomes solid. 	II
4. Solid state is turned into liquid state by process.	
 5. Liquid state is turned into solid state by process. 	
6. By changing the temperature of matter, its speed will char	nge.
7. 0°C is the freezing point of	
5 Give reasons for :	
1. When the temperature of ice cubes increases, they will melt.	

2. Both melting and freezing processes are considered as physical characteristics.	anges.

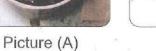
	100	La contraction and		and a
b	What	happens	to	!

1. The particles of water when its temperature is decreased below 0°C.

2. A piece of chocolate if it is exposed to sun ray for a period of time.

Use the following pictures to complete the following sentences to explain melting and freezing processes:







Picture (B)



Picture (C)



Picture (D)

- 1. During melting process, picture (.....) changes into picture (.....) with the help of picture (.....).
- 2. During freezing process, picture (.....) changes into picture (.....) with the help of picture (.....).

▶ Put (√) or (x):

- 1. The thermal energy affects on the movement of particles of matter. (
- 2. Melting and freezing are reversible processes. (
- You have learned that matter can be changed from one state to another if its temperature changes.
- We will study changing of states that happen in water as an example of changing of states of matter.

Changing a solid to a liquid (Melting)

When placing a container of ice cubes on a hot stove, the ice gains thermal energy so, the particles move faster and separate



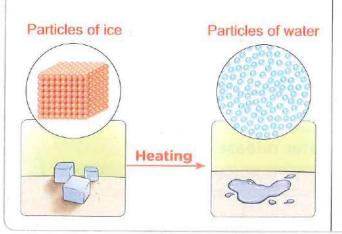
that causes the change of the ice from solid state to liquid state.

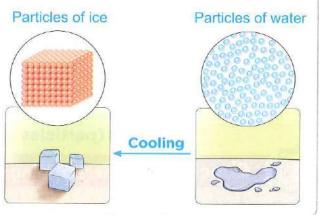
Changing a liquid to a solid (Freezing)

When placing a water container in a freezer, the thermal energy of liquid water is transferred to the space in the freezer so,



the particles move slower and get close together that causes the change of the water from liquid state to solid state (ice).





Changing a liquid to a gas (Evaporation)

When boiling a water container on a hot stove, the water gains thermal energy so, the particles move faster and spread more that causes



the change of the water from liquid state to water vapor. After the hot water vapor hits the cooler air, it condenses into tiny water droplets forming a small cloud (steam).

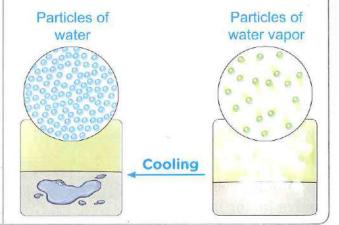
Particles of water water vapor

Changing a gas to a liquid (Condensation)

When water vapor touches a cold lid, the thermal energy of the water vapor is transferred to the cold lid so, the particles move slower and get

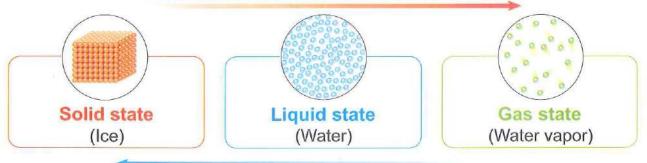


close together that causes the change of the water vapor from gas state to liquid state.



We can summarize the previous in the following diagram :

Heating (particles of water gain energy)



Cooling (particles of water release energy)



Check your understanding

▶ Put (√) or (x):

- 1. When changing water into ice, we heat water.
- 2. Heating of water can change it into water vapor.

1141	
()
1)

evaporation lid summarize بخير بطاء لخص

condensation عبد غد cloud تبخیر سحابة

condense

يتكثف صغير

Activity 8 Real-World Mixtures





• In our world, we can see some matter that are formed of mixing or combination of some materials together forming "mixtures" like those in the pictures above.

Examples of mixtures

Some types of food (salads) :

If you mixed some fruits (solid matter) together you form salad which is a mixture.



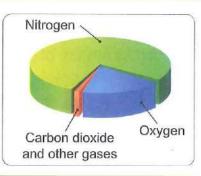
· Salty water :

When you dissolve some salt (solid matter) in water (liquid matter), they form salty water which is a mixture.



Atmosphere :

Atmosphere or air is the most important mixture in our life which is formed of some gases mixed together such as nitrogen, oxygen, carbon dioxide and other gases.



- DE

Check your understanding

▶ Put (√) or (x):

- 1. Mixture is a matter that consists of one material.
- 2. Salty water is a mixture.

Activity 9 Mixtures

 Most things in nature are "Mixtures", but there are other things in our world known as "Compounds".

Mixtures and Compounds

Mixture	Compound
 A mixture is a matter formed of two or more materials. 	 A compound is a matter formed of two or more materials.
 The materials that form a mixture don't combine chemically and mixing them does not change them into new substances. 	 The materials that form a compound combine chemically to form a completely new substance.

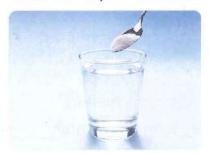
· Mixtures can be made of :

Solid materials



Sand and rocks

Solid and liquid materials



Salty water

Gas materials



Air

♥ Note

The components in many mixtures are difficult to be seen without special equipment such as mixture of gases.

Properties of mixture

- · It consists of two or more materials.
- All materials that form a mixture don't combine chemically.
- Each material in a mixture keeps its properties that you can use to identify it such as:
 - Sugar does not lose its sweetness when it is dissolved in water.
 - In fruit salad, you can identify each type of fruit in the fruit salad.
- The components of a mixture can be separated after mixing them.

be

Separating mixtures

There are many methods to separate the components of mixtures such as:

Filtration:

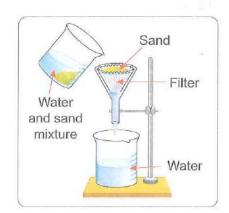
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ely

A filter can be used to separate a mixture if one material in the mixture has smaller particles than the particles of other materials.

Example:

Separating sand from a mixture of water and sand.

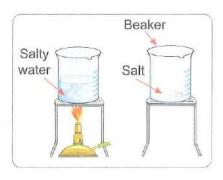


Evaporation:

Evaporation can be used to separate materials that evaporate at different temperature.

Example:

Separating the salt from a mixture of salty water by heating the salty water, the water will evaporate leaving the salt in the beaker.



Check your understanding

- Complete using the words between brackets: (solid - compound - filters)
 - 1. The matter that is formed of two materials or more that are combined chemically is called
 - 2. We can use to separate mixtures that one material has smaller particles than the others.
 - 3. Sand and rocks is a mixture that is made of materials.

In the Assessment Book: Try to answer:

Self-Assessment (32)

as:

Exercises on Lesson 3

	Unde	rstand	○ Apply	Analyze	Evaluate	Create		
1	Ch	oose the correc	t answer :					
	Physical processes which need heating include							
		a. melting and fr	eezing.	b. melting and o	condensation.			
c. melting and evapo			vaporation.	d. freezing and	evaporation.			
	2.	. The two processes which cause particles of matter get close together are						
	-	a. freezing and o	condensation.	b. freezing and	melting.			
	c. freezing and evaporation.			d. melting and condensation.				
•			change water from solid state to liquid and then to gas state, we need to the temperature.					
		a. fix	b. increase	c. decrease	d. reduce			
•	4. (4. Condensation changes the matter from state to state.						
	ć	a. solid – liquid	b. liquid – gas	c. gas – liquid	d. liquid – soli	d		
•	5. \	When we boil wa	ater, it will					
5	ć	a. condense.	b. freeze.	c. melt.	d. evaporate.			
•	6. In cold weather, drops of water are on the windows of houses.							
	ć	a. melted	b. evaporated	c. condensed	d. freezed			
 7. A compound has all the following properties 				properties, excep	t that its compon	ents		
	ć	a. combine chen	nically.	b. form new sub	ostance.			
	(c. change in thei	ir shapes.	d. do not chang	e chemically or p	ohysically.		
•	8.	3. To separate sand only from salty water, we can use process.						
	é	a. filtration	b. evaporation	c. melting	d. freezing			
	9. Salt can be separated by of salty water.							
	ć	a. melting	b. evaporation	c. freezing	d. condensati	on		
2	Choose from columns (B) what suits it in column (A):							
•		(A)		(B)				
	1.	Condensation	tion a. is the change of water from solid state to liquid state.					
	2.	Melting	b. is the change of water from gas state to solid state.					

c. is the change of water from gas state to liquid state.

d. is the change of water from liquid state to gas state.

e. is the change of water from liquid state to solid state.

4.

3.

260

3. Freezing

1.

4. Evaporation

2.

E	Put (V) or (X):		
	When chocolate melts, its particles get closer together.	(()
	2. Evaporation process means that matter changes from liquid state		
	to gas state.	((
	When hot water vapor hits cooler air it forms steam.	()
	4. We can use evaporation process to form mixtures.	()
	5. You can see the different components of the salty water.	()
0	6. The properties of the components of mixture change after mixing		
	them with each other.	()
	Evaporation and filtration are ways of mixtures separation.	()
•	8. The substances that form a compound combine physically forming	,	
	a new substance.	(.)
	Sand and rocks mixture is considered from solid and liquid mixtures	š. (.)
4	Write the scientific term of each of the following:		
	1. It is the process by which matter changes from liquid state		
j	to gas state.	()
•	2. It is the process by which matter changes from gas state		
	to liquid state.	()
•	It is the substance that consists of more than one matter which don't have any physical or chemical change in their properties.	()
0	4. A matter that is formed when two or more materials combine		
	chemically.	()
5	Complete the following sentences :		
•	Water can change from the liquid state to state by increas temperature.	ing its	
•	The distance between particles of water is very small in case of its state.		••
•	The movement of particles of matter increases in case of processes.	and	
•	4. By decreasing the temperature of water vapor, it releaseschanges into water.	energy	and
	5. Salty water is a mixture that consists of salt which is a sta and water which is a state of matter.	te of ma	itter
•	6. When two substances combine and form a new substance, this new is called a	v substa	nce
•	7. To separate mud from salty water we can use process.		
	8 To separate salt from salty water we can use process		

6 Give reasons for:

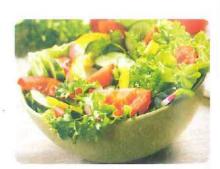
- 1. Formation of water drops when water vapor touches a cold surface.
- 2. Fruit salad and salty water are considered as mixtures.
- Filtration process is used to separate soil from water.

What happens to ... ?

- 1. The particles of water when we increase its temperature above 100°C.
- Salty water when heating it for a long time.

Look at the opposite mixture, then put (\checkmark) or (X):

- 1. The components of this mixture combine chemically.
- The components of this mixture are solids only.
- 3. The mixing process affects the properties of each component in this mixture.



Mention the state of matter which form the following mixtures by using the words below:

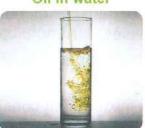
(Solid and liquid - Gas - Solid - Liquid)

Fruit salad





Oil in water





4. materials.

LESSON

Activity 10 Mixing It Up with Mass

▶ Put (√) or (×):

- 1. When mixing salt and water, the salt loses its salty taste.
- 2. In a mixture of two different solid materials, the mass of each material is not affected before and after mixing.
- You have learned that when we mix substances, mixtures or compounds are formed. 50, when mixing substances, what happens to their masses after mixing when their properties change and when their properties don't change?
- To answer these questions, we can do the following experiments.

Experiment 1

To show what happen to masses of substances after mixing when their properties don't change after mixing.

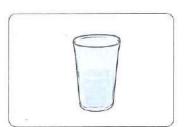
Tools



Salt



Pepper



Water



Oil



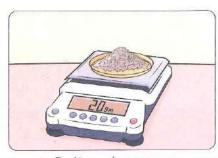
Balance



Spoons

Steps

- 1. Weigh 10 gm. of salt and 10 gm. of pepper using the balance.
- 2. Mix the salt and pepper together using a spoon, then weigh the mass of this mixture and compare between the summation of their masses before and after mixing.



Salt and pepper

Observations

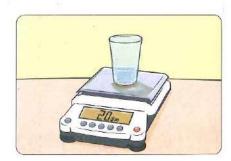
- The summation of their masses before mixing equals the summation of their masses after mixing.
- The properties of the substances don't change after mixing.
- 3. Weigh 10 gm. of water and 10 gm. of oil using the balance.
- 4. Mix the water and oil together using a spoon, then weigh the mass of this mixture and compare between the summation of their masses before mixing and after mixing.



Water and oil

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- The properties of the substances don't change after mixing.
- **5.** Weigh 10 gm. of salt and 10 gm. of water using the balance.
- 6. Mix the salt and water together using a spoon, then weigh the mass of this mixture and compare between the summation of their masses before mixing and after mixing.



Salt and water

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- The properties of the substances don't change after mixing.

Conclusion

The masses of substances before mixing are equal to the masses of these substances after mixing when their properties don't change (when forming a mixture).

Experiment 2

To show what happen to masses of substances after mixing when their properties change after mixing.

Tools



Vinegar



Baking soda



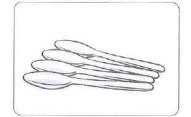
lodine



Cornstarch



Balance



Spoons

Steps

- 1. Weigh 10 gm. of vinegar and 10 gm. of baking soda using the balance.
- Mix the vinegar and baking soda together using a spoon, then weigh the masses of them after mixing and compare between their masses before mixing and after mixing.



Vinegar and baking soda

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- A gas formed causing bubbles which means that the properties of the substances change after mixing.
- Weigh 10 gm. of cornstarch and 10 gm. of iodine using the balance.
- 4. Mix the cornstarch and iodine together using a spoon, then weigh the masses of them after mixing and compare between their masses before mixing and after mixing.



Cornstarch and iodine

Observations

- The summation of their masses before mixing equals the summation of their masses after mixing.
- A compound formed and its color is dark blue which means that the properties of the substances change after mixing.

Conclusion

The masses of substances before mixing are equal to the masses of these substances after mixing when their properties change (when forming a compound).

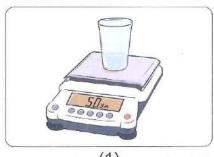
So, the total masses of substances after mixing is equal to their total masses before mixing even if their properties change as they react with each other.



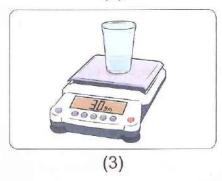
Check your understanding

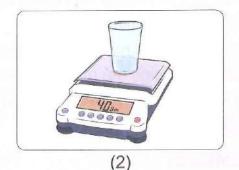
▶ Choose :

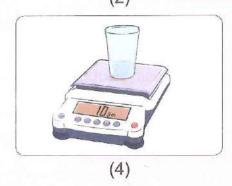
The balance that represents the correct mass of a mixture of 10 gm. of salt and 30 gm. of water is balance number



(1)







In the Assessment Book:

Try to answer:

Self-Assessment 33

Exercises on Lesson 4

	Landa Service		Evaluate Create		
nderstand		Analyze			
Choose the corn 1. By adding ba a. powder 2. If we mix two mixing.	king soda to vinegal	c. increase	total mass will after		
a. mass only	<i>y</i>	d properties a			
whole mixtu	ire will be 9111	c 12	d. 6 d compound will change		
into a. dark gre	4	orange.	d. yellow. , the mass of banana only d. 150	vill	-
2. The prop3. By addin4. If we add	erties of mango will g iodine to starch, th l 10 gm of salt to 5 gr	neir masses and co m of pepper, the ma	ass of mixture will be 15 gm. ding it to 100 gm of water.	(((((((((((((((((((())))
6. By mixir	ig some vegetables	Le using the	words below: color – properties – changed during formation	and)	

- 3. By adding iodine to starch, their will change into dark blue forming a new compound.
- 4. By mixing salt with pepper, a is formed which has no change in the
 and of its components.
- 5. By adding baking soda to vinegar, the properties of the formed substance will be

4 Give a reason for the following:

By adding baking soda to vinegar the properties of each of them are changed.

5 What happens to ... ?

The mass and properties of sugar when adding it to an amount of flour.

6 Look at the following figures, then choose the correct answer:



Figure (A)



lodine Figure (B)



Strach + Iodine Figure (C)

- 1. The mass of starch in figure (C) equals
- (5 gm 10 gm 15 gm)
- 2. The mass of iodine in figure (C) equals
- (5 gm 10 gm 15 gm)
- 3. The color of iodine in figure (C) is

(the same of figure (A) - the same of figure (B) - changed into new color)

4. The produced substance in figure is called compound. (A – B – C)

LESSON

Activity 11 Properties of Mixtures

Put (√) or (×):

- 1. The opposite picture does not show a mixture.
- 2. The parts in the opposite picture can be separated.



Salt and pepper

You have learned that mixtures are formed of mixing two substances or more together.

Properties of mixtures

 Mixtures are made of two or more substances that are physically combined together that means they do not react together.

Example:

- The mixture of the salty water consists of water and salt which don't react together.
- The substances that form mixtures can be physically separated from each other by simple ways such as filtration process and evaporation process.



gm)

gm)

lor)

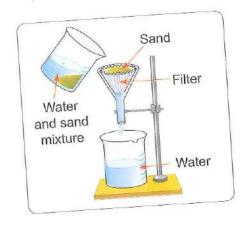
- C)

- We can separate the parts of a mixture of sand and water by using filtration process.
- Solids, liquids and gases can form mixtures.

Examples:

- A mixture of oil and water consists of two liquid materials mixed together.







- A mixture of salt and pepper consists of two solid materials mixed together.



Air is a mixture of some gases.



Cı dif wi

its

burn



Check your understanding

▶ Put (√) or (x):

1. The substances that make mixtures react chemically with each other.	()
2. Mixtures are made of only one kind of substances.	()
3. Air is not a mixture.	()
4. We cannot separate the components of a sand and water mixture.	()

Activity 12 Physical Changes In Our Lives

- Physical change is a type of changes that may occur to different materials around us.
- You have learned that physical change is a change in matter without any change in its structure.
- Physical changes don't form somethings new (new substances) but they can change size, shape or state of matter.

Examples of changes in our lives

Physical changes

Not physical changes

Paper |

Cutting a paper into small pieces.



Burning a paper forming ash.



In cooking j

Making salad:

Cutting vegetables don't make them different but they have the same taste with changes in their sizes.



Making bread:

The baker mixes flour, water, sugar and yeast, then the baker bakes them. The taste of the bread is not like its ingredients.



Give a reason for :

Cutting a paper into small pieces is considered as a physical change.

Because cutting a paper is a change of the shape of paper without any change in its structure.

burning

baker حرق

ilià veast

خميرة

Notes

1. Melting wax is a physical change.



When some metals react with oxygen, they lose their shining and this change is not a physical change.





Check your understanding

▶ Put the following changes in the correct place in the table below : (Making fruit salad – Melting ice – Burning clothes – Cutting pieces of cloth – Losing shining of a metal)

Physical changes	Not physical changes
· ·	*

 	1 /2		11.5	
'ut	(\vee)	or	(x)	:

- 1. Melting of wax is not a physical change. (
- 2. Cutting a piece of paper is a chemical change while burning a paper is a physical change.()

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Activity 13 Chemical Changes in Matter

In the previous activity, you have learned that there are some changes that
happen to matter which are called physical changes and there are some other
changes which are not physical changes. In this activity we will know that the "not
physical changes" are called "chemical changes".

Chemical change:

It is a change in matter with a change in its structure producing a new matter.

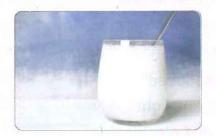
There are some evidences that shows a chemical change occurs.

Examples:

 When burning a piece of paper, you can feel the heat, see the light and observe the ash that is formed.



 When mixing vinegar with baking soda, gas bubbles appear.



 When you strike a match, you can feel the heat and see the light of the burned match.



 When baking a cake in the oven, the taste of the cake is different from the taste of its ingredients.



₽ Note

Physical changes differ from chemical changes, where in physical changes there are no changes happen in the chemical properties of the substances for example, water before and after freezing is still water.



Check your understanding

▶ Put (√) or (x):

- 1. Fireworks exploding in the air is a chemical change.
- In the chemical changes, the chemical properties of matter change.

n the Assessment Book	
Try to answer:	
Self-Assessment 34	

Exercises on Lesson 5

	Understand	OApply	Analyze	● Evaluate	Create
1	Choose the	e correct answer :			
9		ents of mixture can	react together.		
		ar and baking soda			
		d pepper	d. oil and water		
		ays of mixture separatio			
		ration only.	b. filtration only		
973		ration and rusting.		and illtration.	
9		nixtures between two liqu ir and salt mixture.		and apple julge	
			d. sand and wa	a a a a	
0	-17	changes which don't for			
		g of paper.			
	c. baking		d. rusting of iro		
0	5. Buring of	a paper is considered as	s change of	matter.	
	a. only ch	nemical	b. only physical		
	c. both ph	nysical and chemical	d. neither physi	cal nor chemical	
0		hemical changes which is	s occurred in coo	king is	
		vegetables.	b. boiling of wat		
		of chocolate.	d. baking a cake		
0		urning of wood,ene			
		al and light. I and electrical.	b. thermal and Id. sound and el	-	
0		of all the following does			
		except	ir change alter n	lixing them	
	a. salt and		b. sugar and wa	iter.	
	c. cake in	gredients after baking.	d. fruit salad ing	redients.	
0	9. Evaporati	on process is a cha	ange of matter, w	hich can be used to	0
		the components.			
		al – mixture	b. physical – co	70	
	o. Grennic	al – mixture	d. chemical – co	ompound	

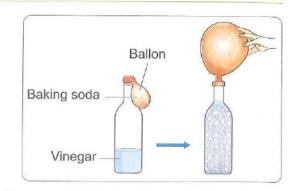
2	Put (V) or (X):		
	1. Mixtures are formed by a combination between two substances or more		
	chemically.	()
	2. You can taste the salt in salty water mixture.	()
0	3. You can separate oil from water by filtration process.	()
0	4. Atmospheric air is considered as a mixture because it consists of		
	liquids and gases matter.	()
0	5. Formation of ash during burning of paper is considered as a change		
	which form a new substance.	()
0	6. Melting of wax produces new substance.	()
0	7. Cutting a piece of cloth is considered as a physical change because		
	it produces a new substance.	()
	8. When you strike a match, light energy and electrical energy		
	are produced.	()
•	Salt and pepper mixture is formed from two solid materials	,	X
	mixed together.	()
3	Complete the following sentences:		
	We can separate dusts from water by using process.		
	2. Cutting a paper into pieces is considered as a change, while but	ırnin	g
	it is considered as a change.		
0	3. Making salad doesn't produce substance.		
	4. The reaction between some metals and gas causes loss of the	ir	
	shining, and this reaction is considered as a change of matter.		
0	5. Melting of wax is a change, while burning of wood is a		
	change.		
Λ	Give reasons for :		
en.	The components of mixture don't produce a new substance when		
Ĭ	combining together.		
	combining together,		
	2. Air is considered as a mixture.		
Ĭ	Z ENGLA GOLDOGICU DA DI DUMUUG.		
	Z. / III le confedered de d'illiniteren		
(6)		******	*****
0	Making fruit salad is considered as a physical change.		
0			*****

5 What happens if ... ?

1. You leave an amount of salty water exposed to sunlight for several days.

2. You expose a shiny piece of metal to air (oxygen) for a long period of time.

6 As shown in the diagram, the balloon inflates when the baking soda in the balloon is mixed with vinegar. What does cause this to happen?



LESSON

6

Activity 14 Chemical Changes

- ▶ Look at the opposite pictures, then choose the correct answer :
 - **1.** The picture shows a physical change.

(A-B)

2. The picture (A) shows formation of new substance that means a change happens.

(physical – chemical)





Picture (A)

Picture (B)

- In the previous activities, you have learned that the chemical change is a change in matter with a change in its structure producing new matter.
 - So, When two or more substances are combined (react), a chemical change occurs forming a new substance, where :
 - This new substance is different physically from the original substances such as its shape, color etc.
 - This new substance has different chemical properties that differ from the chemical properties of the original substances.

Examples:

- When iron combines (reacts) with oxygen and water, they form rust.
 - * Rust is a chemical substance called iron oxide which is a layer with reddish color.



Rusting of a vehicle



Rusting of an iron nail

- When oxygen combines with carbon and hydrogen, they release heat that can start a fire.
- * The fire can change substances as wood into ash.
- When vinegar combines with baking soda, they form gas bubbles.





Notes

- 1. There are important chemical changes take place inside your body where chemicals produced in your body help in the food digestion.
- 2. The physical changes differ from the chemical changes where chemical changes are not reversed easily.



Check your understanding

- ► Complete the following sentences using the words below : (rust – oxygen – chemical – water)
 - 1. The iron combines with and forming rust.
 - 2. The changes that are not reversed easily are changes.
 - 3. When iron toys are left out in rain, is formed.

Activity 15 How Has It Changed?

- You have learned that there are two types of changes of matter that happen around us in our daily life which are physical and chemical changes.
- The following evidences can be used to differentiate between the physical and chemical changes.

Some evidences that describes physical changes

Change in size

Examples:

Cutting
 a paper.



· Cutting a fruit.

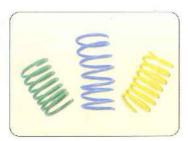


Change in shape

Examples:

Coiling

 a straight
 piece of wire
 to form
 a spring.



 The flow of sand in an hourglass changes the shape of sand in the container.



Expected change in color

Examples:

 Adding drops of food colors to a cup of water.



 Coloring a paper.



Change in state of matter

Examples:

 Melting of a piece of chocolate.



 Evaporation of water.



From the previous examples, we can conclude that physical changes don't produce new substances.

Some evidences that describes chemical changes

Unexpected color change

Example:

When mixing iodine with cornstarch, a new substance is formed and its color is dark blue.



Formation of gas bubbles

Example:

When mixing baking soda with vinegar, gas bubbles appear.



Formation of strong odor

Example:

Living a cup of milk out of the fridge for about two days can produce a bad smell.



From the previous examples, we can conclude that chemical changes produce new substances.



Check your understanding

▶ Complete the following table of changes :

Change	Physical or chemical change	Evidence
- Melting a piece of butter.		
- Frying an egg.		
- Painting a piece of wood.		5
- A bread is left in an oven for a long time that it smells like something burned.	* *** ***	

In the Assessment Book:

Try to answer:

Self-Assessment 35

Exercises on Lesson 6

Understand	O Apply	Analyze	Evaluate	Create
1 Choose the co	orrect answer:			
1. All the follow	wing examples bel	ong to physical cha	anges, except	
a. cutting a	piece of paper.	b. melting of		
c. digestion	of food.		on of water vapor.	
 2. The change produced from 	that is produced a	as a result of iron ru	usting is the same	change
a. melting of	fice.	b. making bre	ad.	
c. cutting a p	piece of cloth.	d. breaking of		
a. Ireezing o	f water.	ater to sunlight for	a long time cause	
🎐 4. Among exam	ples of physical c	hanges is		
a. melting of	iron.	b. burning of w	ood.	
c. making a d	cake.	d. digestion of		
🎐 5. Iron nail will r	ust when it reacts			
		b. carbon dioxi	de and vinegar	
c. oxygen and	d vinegar.	d. oxygen and		
 6. When oxyger 	n combines with ca	arbon and hydroger		produced
a. electrical	b. thermal	c. kinetic	d. solar	noduced.
 7. All the following 	ng are examples o	f physical changes		
a. cutting a pa	aper.	b. cutting a pied		*****
c. coloring a p	iece of paper.	d. cutting some		
8. Among chemi mixing	cal unexpected co	lor change is the c	olor that is produce	ed from
	with vinegar.	b. iodine with co	ornstarch.	
c. food colors	with water.	d. salt with water		
a piece oi papi	ollowing is conside er ?	ered as a chemical	change that occur	s to
a. Coiling it.		b. Coloring it.		
c. Cutting it into	pieces.	d. Burning it.		

2 Choose from column (B) what suits it in column (A):

(A)		11-11-11	(B)		
1. Expected change in		tting a tomato into			
2. Formation of strong	Juui	ding drops of food king lodine with co	colors to a cup of rnstarch.	water	•
3. Change in size	A DECEMBER OF THE PERSON		out of fridge for a lor	ng time	Э.
4. Unexpected change in	n color e. mi	xing salt with wate	er.		
1 2.		3	4		
Put (✓) or (X):					
1. Burning of wood is a				(
2. When dissolving salt	in water, the s	alt disappears forr	ning	(
a new substance.	't shange the	structure of iron		(
3. Rusting of iron does4. During chemical chair			will be changed.	(
5. We can separate bal					
them together.	ang ooda nom	····ogen carry		(
6. Their is a change in	shape when yo	ou coil a piece of p	aper.	(
7. When living a cup of	milk out of the	fridge for a long ti	ime, it will form		
a new substance.	at the same of the	79		(,1
Complete the following				29	
The change in the str .		riginal matter prod	ucing a new matter	ris	
known asc 2. Boiling of water to fo		r is considered as	a change	e	
3. Digestion of food for				<u>.</u>	
Making yoghurt from					
5. Changing the color of			change, \	while	
changing the color of	f water and foo	od color mixture is	a change	e.	
6. Iron rusting is a	change,	while iron painting	is a cha	nge.	
Give reasons for :					
 1. Formation of a layer a period of time. 				after	
2. Formation of a bad of		is left out of the fr		ays.	

	100				
b	What	hap	pens	it	 ?

- We mix iodine with cornstarch.

 Oxygen, carbon and hydrogen are combining together.
- Ships body which are made of iron exposed to damage due to a type of change that you are studied.
 - When iron reacts with a said.
 - When iron reacts with and,
 the body of ship loses its shining as
 a result of iron (complete)

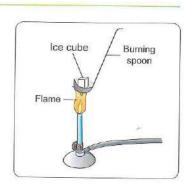


B Look at the opposite figure, then answer:

What will happen to the ice cube?

 What is the type of change?

 (Give a reason for your answer).



LESSON

ge

Activity 16 Record Evidence Like A Scientist

In this concept, you have learned a lot about what happens to the matter when it is heated cooled or mixed with other substances. Now, try to think like a scientist by writing your claim, your evidence and your scientific explanation about one of the main points of this concept through the four steps you have learned in the previous concepts.
7 Step 1 The Question
What happens to the mass of a substance when it is heated, cooled or mixed with other substances?
Step 2 My Claim
Step 2 Pry Claim
Step 3 My Evidence
Step 4 My Scientific Explanation

claim

evidence وظیفة / دور

scientific explanation افتراض

دليل التفسير العلمى

Activity T S T E M in Action

▶ Put (√) or (x):

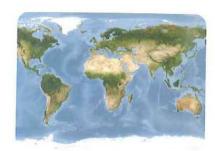
- The salt water of seas and oceans is considered as a mixture.
- 2. The components of mixtures can be separated.



salt water of sea

Plenty of Water, But None to Drink

Many people around the world cannot reach fresh water although about 70 % of the surface of the Earth is covered by oceans. But we cannot drink the water of oceans and seas because it is a mixture of water, salt, other minerals, gases, living organisms and dead organisms. But we can use desalination processes to drink this water.



Desalination:

It is the process of removing salt from water.

How do we separate fresh drinkable water from the mixture of ocean's water?

As you have learned in the previous lessons that we can use filtration and evaporation processes to separate the components of a mixture as ocean's water where :



Desalination plant

I Filtration :

It removes any large materials such as seaweed, shells and fish.

 Water, salts, minerals and gases would pass through filters that makes water stil undrinkable.

2 Evaporation:

When boiling the filtered water, water vapor rises up leaving salts and other minerals.

When cooling the water vapor, it is turned into liquid water and it is safe to drink it.

Problems of desalination

- It requires a lot of energy.
- It is very expensive process.
- It may lead to environmental problems such as :
 - Small marine organisms can be hurt due to sucking of water into the desalination plants.
 - The water that contains a very big amount of salt that is pumped back to oceans after desalination can be dangerous to the marine life.

Notes

- Drinking salt water makes the human body dehydrate faster which means that the human body loses water faster.
- 2. Egypt has over 80 desalination plants.

100

Check your understanding

 20.00	11	Vac	141	
·ut	(A	or ((2)	

Il form which	1	1
 We use desalination process to remove salt from water. 	(,
2. We can drink salt water.	()
3. Desalination does not have any disadvantages.	()
4. Egypt does not have any desalination plant.	()

Activity (18) Review: Changes in Matter

- We can summarize this concept in the following main points:
 - Matter can be changed from one state to another without any change in its amount, mass and total number of particles.

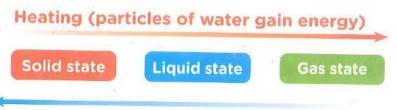
Melting:

It is a process in which a matter is changed from solid to liquid state when its temperature increases.

The thermal energy affects the state of matter.

Physical changes:

They are changes in matter without any change in their structures.



Cooling (particles of water release energy)

Mixture:

it is a matter formed of two or more materials that don't combine chemically.

 The total mass of substances after mixing is equal to their total mass before mixing even if their properties change.

Chemical changes:

They are changes in matter with changes in their structures producing new matter.

Desalination:

It is the process of removing salt from water.

In the Assessment Book:

Try to answer:

- Self-Assessment (36)
- Model Exam on Theme (2)

Exercises on Lesson 7

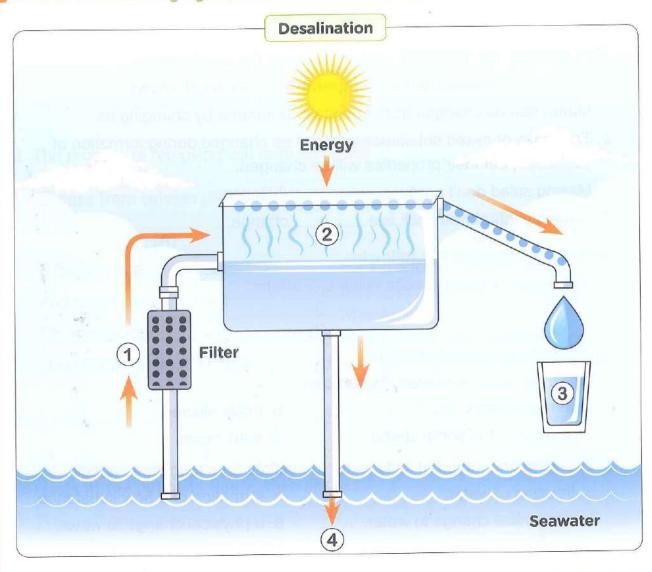
	Understand	O Apply	Analyze	Evaluate	reate	
1	Choose the correct					
•	People cannot drink the water of oceans and seas because it is a mixture of water and					
	a. salt only.		b. minerals only	/.		
	c. living organis	ms only.	d. salt, minerals	s and living organisms		
	2. Desalination pro	ocess means that	we remove	. from water to drink it.	1	
	a. sugar	b. salt	c. oxygen gas			
0	3. We can use	processes to	separate fresh drir	nkable water from the	water	
	of seas and oce	eans.				
	a. filtration and	rusting	b. evaporation	and coloring		
	c. filtration and	coloring	d. filtration and	evaporation		
	4. We can use filti	ration process to r	remove all the follo	owing from sea water,		
	except	,				
	a. seaweed.	b. salt.	c. shells.	d. fish.		
0	5. To separate sa	lt and minerals fro	om seawater, we o	an use process		
	a. evaporation	b. melting	c. freezing	d. rusting		
	6. All the following	g is from the probl	ems of desalination	on, except that		
	a. it needs a bi	g amount of energ	gy.			
	b. it needs a sr	nall amount of en	ergy.			
		ensive process.				
	d. it may cause	e many environme	ental problems.			
2	Put (V) or (X) :					
0		and the world can	reach fresh water	easily.	()
				ture because it consist	ts of	
	water, minerals	s and gases.			()
9	3. We can use m	elting process to r	make the water of	seas and oceans		2
	drinkable.				()
6	4. To get drinkabl	le water from salty	y water we can us	e filtration process on	y. ()

What happens if ...?

You boil an amount of seawater for a long time.

7 Look at the following figure, then choose the correct answer:

it



Model Exam on Concept (2.3)

			20			
1	(A) Complete the following sentences u	ising the words below:	(5 marks,			
	(compounds - temperat	ture - chemical - new)				
	Matter can be changed from one state to another by changing its					
	 The mass of mixed substances will not be changed during formation of, but their properties will be changed. Making salad don't produce substance. 					
	4. Making yoghurt from milk is a change.					
	(B) Give a reason for the following:					
	Air doesn't have a definite volume or	shape.				
	-N ₂					
2	(A) Choose the correct answer:		(5 marks)			
4	1. When the water is heated, its particles					
	a. move faster.	b. move slower.				
	c. move with the same speed.	d. don't move.				
	2. Exposing an amount of salty water to sunlight for a long time causes					
	a. freezing of water.	b. formation of a new substan				
	c. a chemical change to water.	d. a physical change to water				
	3. Desalination process means that we remove from water to drink it.					
	a. sugar	b. salt				
	c. oxygen gas	d. hydrogen gas.				
	4. The of iodine will not change after mixing it with starch.					
	a. mass only	b. color only				
	c. color and mass	d. properties and mass				
	(B) What happens to ?					
	The mass and properties of sugar when it is mixed with an amount of flour.					
3	(A) Put (✓) or (X):		(5 marks)			
	1. Melting and freezing are reversible pro	cesses.	()			

2. Particles of solid matter are spread out from each other.

Melting of wax produces new substa				
 After evaporation of seawater, the way by cooling. 	ater vapor is turned into liquid water ()			
(B) Write the scientific term of each of	the following:			
1. A matter that is formed when two or				
	()			
The process of removing salt from s.	alt water . ()			
(A)Choose from column (B) what suits	it in column (A): (5 marks)			
(A)	(B)			
Expected change in color.	a. cutting a tomato into small pieces.			
2. Fromation of strong odor.	b. adding drops of food colors to a cup			
3. Change in size.	of water.			
	c. mixing iodine with cornstarch.			
Unexpected change in color.	d. leaving a cup of milk out of fridge for a long time.			
· ·	e. mixing salt with water.			
1 2	3 4			
(B) Look at the opposite figure, then a	answer:			
1. What will happen to the ice cube?	Ice cube Burning spoon			
2. What is the type of change ? (Give	a reason for your			
answer)				

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SERIES

SCIENCE

Assessment Book

By A Group of Supervisors



This Assessment Book

Includes Three Parts

Part

Self-Assessments:

(Page 3)

Include:

- Cumulative self-assessments on lessons of each concept.
- Cumulative model exam on concepts.
- A model exam on each theme.



Part

Final Examinations:

(Page 55)



- Models of final examinations on the first term.



Part

Projects

(Page 73)

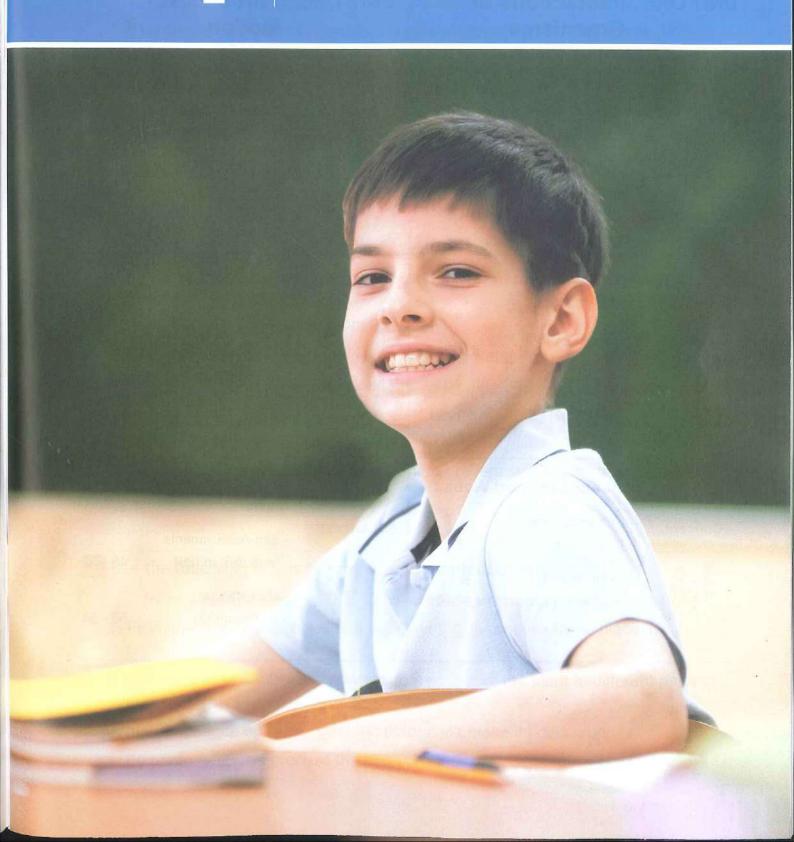


- Unit one project.
- Interdisciplinary project.
- Unit two project.



PART

Self-Assessments



Content

THEME TWO: Matter and Energy THEME ONE: Systems UNIT TWO: Particles in **UNIT ONE: Interactions of** Motion **Organisms** Matter in the World Plant Needs: Around Us: - Self-Assessments Concept Concept - Self-Assessments from (1) to (6) _____5 - 10 from (19) to (24) _____ 30 - 35 2.1 - Model Exam - Model Exam on Concept (1.1) ____11 - 12 on Concept (2.1) ____ 36 - 37 Describing and **Energy Flow in** Ecosystems: Measuring Matter: Concept Concept - Self-Assessments - Self-Assessments from (7) to (12) _____13 - 19 from (25) to (29) _____ 38 - 43 2.2 1.2 - Model Exam on Concepts - Model Exam on Concepts (1.1) & (1.2) _____ 20 - 21 (2.1) & (2.2) 44 - 45 Comparing Changes in Changes in Food Webs: Matter: - Self-Assessments Concept Concept - Self-Assessments from (13) to (18) 22 - 26 from (30) to (36) ____ 46 - 52 2.3 - Model Exam - Model Exam on Theme (1) _____27 - 29 on Theme (2) 53 - 54

on Concept (1.1)

Self-Assessment 1 on Lesson 1

1 (A) Choose the correct answer:								
1. The plant absorbs water from the soil through its								
a. roots. b. stems. c. leaves. d. flowers.								
2. The substance which is produced by the plant during photosynthesis process								
is								
a. sunlight. b. water. c. sugar. d. carbon dioxide g	as.							
3. All the following substances are not important for the plant growth, except								
a. rocks. b. insects. c. flowers. d. air.								
(B) Give a reason for the following:								
Without leaves the plants can't grow or survive.								
· 1 · 2		••••						
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								
2 (A) Put (V) or (X):		120						
Some plants can grow in the absence of soil.	()						
Plant leaves absorb carbon dioxide gas from water.	()						
3. Animals, humans and plants have the same structure that help them to	7	V						
grow and survive.	()						
(B) What happens if ?								
We cover the green leaves of the plant to prevent sunlight from reaching t	hem	٦.						
		22.20						
		•••						
3 Use the following words to complete the sentences below:								
(root – stem – leaves – oxygen – water – nutrients – carbon dioxide	e)							
1. From the plant's structures that photosynthesis process takes place in it								
is								
The plant's transfers water from of the plant to different part the plant.	ts of							
3. In the absence of gas, the plant can't make its own food.								
4. By photosynthesis process the plant produces and gas.								

Self-Assessment 2 till Lesson 2

1	(A) Put (✓) or (X):				
	1. Seeds of beans will	die if we put them on a wet paper towel and pro	vide		
	it with nutrients.			()
	2. Plants can live with	out leaves.		()
	3. Soil is important for	the seeds to complete their growth.		()
	(B) Give a reason for t	the following:			
	Stem is an importar	nt part for the plant.			
2	(A) Correct the under	lined words:			
	1. Digestive system is	a place that should be full of water and minerals	s to		
help the plant grow.					.)
	2. Leaves of plants are	e responsible for absorption of water from the			
	soil.			•••••	.)
	3. Oxygen gas is a basic need that the plant takes from the air to				
	make its own food.		(.)
	(B) What happens if	. ?			
	We put some bean	seeds in a place containing water and nutrients	for som	ne	
	days.				
		A			
2	Chaosa from column	(B) what suits it in column (A) :			
-		A THE STATE OF THE			
	(A)	(B)	991		_
	1. Germination	a. is not important for plants in their initial grow			
	2. Water	 b. means the formation of sprouts from the see begins to grow. 	ea whei	דו וו	
	3. Soil	c. the plant get it from air.			
		d. is from the basic needs of the plant to surviv	/e.		

2.

Self-Assessment 3 till Lesson 3

1 (A) Choose the correct answer:				
1	During photosynthesis process, the green leaves take from air to make its own food.				
	a. carbon dioxide gas	b. oxygen gas			
	c. water	d. sunlight			
2	. The water and nutrients reach plar	nt's leaves by the help of			
	a. roots only.	b. xylem and air.			
	c. xylem and roots.	d. roots and sunlight.			
3.	. All the following are basic needs fo	r plants to survive, except			
	a. sunlight. b. air.	c. water. d. insects.			
(B	3) Give a reason for the following:				
	Green leaves become pale green room.	or yellow when the plant is placed in a	darl	K	
2 4	*				
	A) Put (V) or (X):				
	Plants and humans can make their		()	
	Roots help the plant to transport ga		()	
		pends on the presence of the sunlight.	()	
(B) What happens if ?				
	The plant's leaves are removed du	uring its growth.			
			•••••		
			•••••		
3 U	se the words below to complete th	e following sentences :			
	(yellow - green - sto	mata – xylem – oxygen gas)			
1.	The color of leaves in				
	Pot (1) is while in		**************************************		
	Pot (2) is		1		
	Gases can come in or out the leave	es			
	due to the presence of				
	During photosynthesis process, will be produced from the plant	Pot (1) Pot (2)			
			Pos 		
4.	Water and nutrients can reach leave	es or plant through			

Self-Assessment 4 till Lesson 4

1	(A) Correct the underl	ined words:	
		aves absorb the energy of sunlight.	()
		ne plant's root that help it to absorb more	
	water from the soil.		()
	Green leaves production process.	ce carbon dioxide gas during photosynthesis	()
	(B) What happens to	. ?	
	The plant's leaves v	when the plant is placed in a cup containing col	lored water.
2	(A) Complete the follo	wing sentences :	
	1. The of plant the soil.	t is responsible for absorption of water and nutr	ients from
	2. Gases can come in	or out the leaves through	
	3. The plant's	support leaves and flowers of the plant.	
((B) Give a reason for th	ne following:	
		lled phloem inside plant's leaves.	
	THEIR BIC LUDGO GAI	ned prilociti iriside platite loaves.	
3	Choose from column ((B) what suits it in column (A):	
	(A)	(B)	
	1. Pine trees	a. have climb stems.	
	2. Potato plants	b. have runners stems.	
	3. Vines	c. have tubers.	
	4. Tree trunks and	d. have wood stems.	
	shrubs	e, have needles leaves.	

4.

2.

Self-Assessment 5 till Lesson 5

1	(A) Choose the correct answer:					
	1. Gases enter plants through					
	a. leaves. b. stems. c. roots. d. flowers.					
	2. Arteries carry blood rich in					
	a. carbon dioxide gas. b. oxygen gas and glucose sugar.					
	c. oxygen and carbon dioxide gases.					
	d. carbon dioxide gas and glucose sugar.					
	3. Flowers produce for reproduction.					
	a. leaves b. stems c. seeds d. roots					
	(B) Give a reason for the following:					
	Soil may not have been included as a basic need for plant growth.					
	·					
2	(A) Put (V) or (X):					
	1. Plants have roots, stems, leaves and sometimes flowers or fruit.	()			
	2. Germinating means that the plant sprouts and begins to grow from a seed.	()			
	3. During photosynthesis, green plants use sunlight to combine oxygen with					
	water to make sugar.	()			
	(B) What happens if ?					
	Roots of plants don't have root hairs.					
3	Use the words below to complete the following sentences (you can use the					
	same word many times):					
	(phloem – xylem – veins – nutrients – sugar – arteries – oxygen)					
	1. The vessels of contain carbon dioxide gas and is low in and oxygen gas, carry blood from all body parts back to the heart.					
	2. The tubes that carry from the leaves to all plant parts are called					
	3. The tubes that carry nutrients from the roots the leaves are called					
	4. The vessels of carry blood rich in and, carry blood from the heart to all body parts.	om				

Self-Assessment 6 till Lesson 6

1	(A) Put (V) or (X):		
	1. Maple seeds have spines to stick to animal fur.	()
	2. Plants can grow in a dark room.	()
	3. Flowers are important parts of plants that help them for reproduction.	()
	(B) Give a reason for the following:		
	Root hairs are important for plants.		
2	(A) Write the scientific term of each of the following :		
	Tubes responsible for transfering food from the leaves to other parts of the plant.	, ,)
	2. Tiny openings inside plant's leaves through which gases come in		
	or out the plant.	,)
	3. The process of producing new plants. (,)
	(B) What happens to ?		
	Plant's leaves color if the plant can't absorb water from the soil for m	nany day	ys.

3 Look at the opposite figures then answer the following questions:



Plant's seeds (1)



Plant's seed (2)

- Plant's seeds number (1) can be dispersed by because they are
- 2. Plant's seed number (2) can be dispersed by

Model Exam

on Concept (1.1)

Го	tal	n	nai	1
	2	20	_	

1	(A) Complete the following sentence	es:	(5 mai	rks)		
	1. Plants absorb and from the soil through their					
	2. Without in the leaves of pl	ants, gases can't move in or out the p	olant.			
	\$\frac{1}{2}\tag{1}	stems, while most flowers have				
	4. Transport system in the plant cons	sists of two types of vessels which are				
	(B) Give a reason for the following:					
	Xylem in plant is a one-way vessel					
				020		
2	(A) Choose from column (B) what su	its it in column (A):	(5 mai	rks)		
	(A)	(B)				
	1. Coconut seed	a. sticking to animal fur.				
	2. Maple seeds and dandelion	b. floating on water.				
	seeds	c. being eaten by animals.				
	3. Burdock seeds	d. traveling by wind.				
	4. Tomato seeds and apple seeds	e. staying inside flowers without mov	/emen	t.		
	1 2	3 4				
	(B) What happens if ?					
	We remove the flowers of a plant.					
3	(A) Put (V) or (X):		(5 mai	rks)		
	1. Humans, animals and plants need	food and water to survive.	()		
	2. All seeds need soil in its initial grow	vth.	()		
	3. There are tiny holes opening on the	e surface of stem that allow gases to	pass			
	through into the plant.		()		
	4. Vines have a kind of stems called	climb stems.	()		

Part 1

(B) Write the scientific term of each of the following:					
	energy from the	e sunlight.	gives them green co		()
		at is produced fro ovides it with its n	m the plant during ր needed energy.	ohotosynthesis	()
4	(A) Choose the co	orrect answer:			(5 marks)
	Food materials by	are transported f	rom the leaves to o	ther parts of the	e plant
	a. xylem.	b. phloem.	c. chlorophyll.	d. stomata.	
	2. Without,	plants can't grow			
	a. insects	b. rocks	c. sunlight	d. moonlight	
	3. We can replace	e the soil as a sou	irce of nutrients and	I water by	
	a. digestive sys	stem.	b. root system.		
	c. hydroponic s	system.	d. respiratory sy	stem.	
	4. Plants make th	eir food by a proc	ess called		
	a. respiration.		b. absorption.		
	c. digestion.		d. photosynthes	is.	
	(B) Correct the ur	nderlined words:		*	
	1. Human circulat	tory system consi	sts of <u>lungs</u> and blo	od vessels.	()
	2 Plant's leaves	ahsorh water and	nutrients from the s	soil	()

on Concept (1.2)

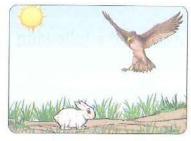
Self-Assessment 7 on Lesson 1

1	(A) Put (V) or (X):		
	1. There is on any energy flow between the components of an ecosystem.	(
	2. We don't need any energy during sleeping.	(
	3. All living organisms can do photosynthesis process.	(
	(B) Give a reason for the following:		
	Photosynthesis process is the most important process that occurs in natu	ıre.	
	\[\tag{ \tag} \tag{ \tag{ \tag{ \tag{ \tag{ \tag{ \tag{ \tag{ \tag{ \ta		
2	/A) Complete the fellowing and		
_	(A) Complete the following sentences :		
	 Without ——— energy that comes from the Sun, plants cannot make the own food. 	ir	
	2. Consumer eats or may eat another consumer.		
	The plant takes its needed energy from sugar which is formed dur photosynthesis process.	ring	
	(B) What happens to ?		
	The continuity of life in an ecosystem, when there is no plants in this ecosystem		
			• • •

B Look at the following two ecosystems, then choose the correct answer:



Ecosystem (1)



Ecosystem (2)

- 1. The predator can find a prey in
 - a. ecosystem (1) only.
- b. ecosystem (2) only.
- c. both ecosystems (1) and (2).
- d. neither ecosystems (1) nor (2).

 The light energy of the Sun can passes from plants to the predator in	i i
c. ecosystem (2) only. d. ecosystem (1) in the absence of water.	
Self-Assessment 8 till Lesson 2	
 (A) Choose the correct answer: 1. Photosynthesis process, means	
 2. If a spider eats a bee that feeds on a plant,	
3. The predator that feeds on a living organism, may be for another living organism.a. a decomposerb. a producer	
c. a prey d. a primary consumer	
(B) Give a reason for the following: Producers depend on light energy of the Sun to grow.	
(A) Cross out the odd word: 1. Producers – Consumers – Nonliving things – Decomposers. 2. Sunlight – Glucose – Consumers – Photosynthesis process. 3. Fungi – Snakes – Millipedes – Bacteria. ()

(B) Study the fol	lowing food chain, th	en complete the s	entences below:			
V-2524	Plant — Grasshopper — Bird — Snake — Hawk.					
	is a producer, becaus					
– I ne i	is a secondary consu	mer, because	**			
3 Compare betwe	en producers, consun	ners and decompo	sers according to			
definition:						
P.O.C	Producers	Consumers	Decompo	sers		
Definition :						
	Self-Assessmer	nt(9) till Less	son 3			
(A) Choose the c	correct answer:					
	at shows many interac	ctions between diffe	erent types of livin	ig		
a. food chain.	b. food web.	c. ecosystem.	d. habitat.			
	g are basic needs for	•				
a. water.			d. electricity.			
3. All the followin	g are producers, exc	ept				
a. grasses.			d. algae.			
(B) Give a reason	for the following:					
In a food cha plants.	in, a bird is not consid	dered as a seconda	ary consumer if it	eats		

(A) Cross out the				, .		
	s – Tigers – Foxes. ria – Plants – Milliped	00		()		
	obit – Sheep – Goat.	63.	1960	()		
	wing living organism	s to form a food c	hain that contains	only		
	(Deer – Lion –	Grasses – Crocoo	dile)			
		•••••••••••••••••••••••••••••••••••••••	••••••			

3 Study the following three groups of living organisms, then choose the correct answer below:

Group (A)	Group (B)	Group (C)
– grasses	- cows	- grasses
– graps	- ducks	- foxes
- carrots	- chickens	- hawks
- potato	- rabbits	- rabbits
- tomato	– fish	- fish

*	potato	rabb	its	- rabbits	
8	- tomato	– fish		- fish	
1. What	is the only group that	shows	producers and	consumers living	
orgar	isms ?				
a. Gro	oup (A).		b. Group (B).		
c. Gro	oup (A) or (B).		d. Group (C).		
2. Group	o (B) shows				
a. pro	ducers and decompos	sers.	b. consumer a	and decomposers.	
c. prir	mary consumers.		d. secondary	consumers.	
3. Energ	gy can flow in a food c	hain, be	etween animals	of	
	oup (B).		b. group (C).		
_	oup (A).		d. group (B) or	r (A).	
1000	mposers		. , ,	•	
	present in group (A).		b. are present	in group (B).	
	present in group (C).		d. not present		
	Self-Asses	sme	nt 10 till L	esson 4	
(A) Cros	s out the odd word:				
the state of the s	en – Fox – Duck – Ra	bbit.			(
	e – Hawk – Rabbit – C		9		(
	it – Eagle – Mouse – ((
					(
190	a reason for the follo				
Des	ert ecosystem contain	s few n	nembers of prin	nary consumers.	
/A) Com	ploto the following p	aradrai	ah using the we	ords below:	

(A) Complete the following paragraph using the words below:

(grasses - sunlight - insects - frogs)

The main source of energy for is the to make their own food, then they are eaten by that is considered as a primary consumer, while is considered as a secondary consumer.

		Self-Assessments
B) What happens if ? All preys that a top preda	ator can eat are removed f	rom an ecosystem.
Study the following three foll	igures that represent anim aller one, then choose whi	nals as squares where the ich figure can express a
food chain : Secondary consumer	Hawk	Secondary consumer
Rabbit	Snake	Primary consumer
Top predator	Primary consumer	Producer
Grasses	Producer	Top predator
Figure (A)	Figure (B)	Figure (C)
Self-Asse A) Choose the correct answ	essment 11 till Les	son 5
. Hyenas and house flies ar		
a. decomposers	b. scavengers	+
c. producers	d. top predators	
Crabs and sea snails are value a. photosynthesis process b. photosynthesis process c. natural recycling process d. natural recycling process	vorking together to do on land. in water. s on land.	***
Vultures may fight hyenas a. a living organism on land b. a dead organism on land c. a living organism in deep d. a dead organism in deep	ford. d. d. o water.	

All species of scavengers are removed away from an ecosystem.

(B) What happens if ... ?

2 (A) Cross out the of 1. Millipedes – Slug 2. Rabbits – Bacteri 3. Pine trees – Appl (B) Give a reason for Consumers can recycling proces	s – Crabs – Mush a – Deers – Shee e trees – House f or the following : not directly use th	eps. ilies – Grasses	s. at resulted from nat	() () () tural
3 Choose from colum	n (B) what suits	it in column (A	ı):	
(A)			3)	
1. Humans	a. return nutrien			
2. Earthworms	b. return nutrien			
			to make new produ	ucts.
3. Grasses	Control State of the Control of the		and for primary con	1
1,	2	3		
Se	lf-Assessme	nt (12) till	Lesson 6	
1 (A) Put (V) or (X):			*	
1. Plant ecologists	can restore habita	ats for plants v	vhich are important	t for all other
living organisms.				()
Restoring ecology			animals.	()
Sticky seeds nee	ed water to be dis	persed.		()
(B) Give a reason for	or the following:			
Light seeds are	dispersed by win	d.		
2 (A) Choose the cor	rect answer :			
1. Plant-community		ir studies and	researches on	****
a. plants only.	_	b. animals o		
c. plants and ani	mals.	d. producers	and consumers.	
2. If a plant don't d	sperse its seeds,	so this plant p	opulation will	***
a. increase.		b. decrease		
c. not affected.		d. posetively	/ affected.	

	3. All plants disperse their seeds	*****	
	a. through wind only.	b. by sticking to animals bodies only.	
	c. in many different ways.	d. through water only.	
	(B) What happens if ?		
	Scientists and people don't resto	re a damaged ecosystem.	
	*		
3	Rearrange the following steps, to re	estore a damaged plant ecosystem :	
	() Supply healthy water.		
	() Prevent pollution.		
	() Remove waste products	5.	

Model Exam

on Concepts (1.1) & (1.2)

Го	tal	m	a	rk
1.5	2	0.		

1	(A)	Choose	the	correct	answer	
---	-----	--------	-----	---------	--------	--

(5 marks)

- 1. Wind play an important role in dispersing seeds.
 - a. floating
- b. sticky
- c. big heavy
- d. small light
- 2.system in plants consists of tubes that water and nutrients move through it.
 - a. Digestive
- b. Respiratory
- c. Transport
- d. Nervous
- 3. To make a food web, you have to classify animals in an ecosystem according to their they get.
 - a. gases
- b. food
- c. light
- d. water
- 4. The kind of stems that extended underground are called
 - a. climb stems.
- b. tubers.
- c. runners.
- d. wood stems.

(B) What happens if ... ?

All the primary consumers disappear from a certain food chain.

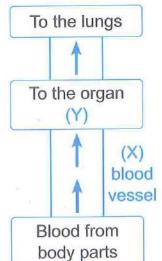
2 (A) Put (V) or (X):

(5 marks)

- 1. Photosynthesis process takes place in the plant's roots. ()
- 2. Decomposers include mushroom fungus and slugs. ()
- 3. At the beginning of germinating some bean seeds, they can grow without soil or sunlight.
- 4. Birds eat insects as a prey to get their energy.

(B) The following figure represent a blood vessel, which answer represents (X) & (Y):

	(X)	(у)
а	Artery	The heart
b	Vein	The brain
С	Vein	The heart
d	Artery	The lungs



(A) Form the following food chain by using the given words to bracket, then complete the sentences below:	between (5 marks
(Duck – Grasses – Fox)	
(1) (2)	3)
 This food chain doesn't contain consumer. The group of living organisms that responsibles for the final chain are Grasses changes the energy of the Sun into en 	
process.	10 100 10 10 10 10 10 10 10 10 10 10 10
(B) Correct the underlined words:	
 There are tiny holes on the <u>stem</u> to allow gases passes into the plant. 	
The state of the s	()
2. Most flowers have wood stems.	()
(A) Write the scientific term of each of the following:	/ E
1. The gas that is present in air and necessary for the formation	(<i>5 marks)</i> n
of plant foods.	()
Small structures in the plant's roots that increase the absorp water and nutrients from the soil.	tion of ()
It is a process through which decomposers can recycle nutric back into the soil.	ents ()
4. Part of the plant that are responsible for reproduction.	()
(B) Study the following food web, then choose the correct ans	
Grasses → Butterflies → Birds → Sna → Grasshoppers →	
When disappear from this food web birds are moving a food in another ecosystem.	away to search for
a. butterflies only b. worms only	
c. grasshoppers only d. primary consumers	
2. Grasshoppers may die, when there is no	
a. birds. b. snakes. c. grasses. d. butter	rflies.

on Concept (1.3)

Self-Assessment 13 on Lesson 1

1	(A) Cross out the odd word: 1. Grasses – Algae – Sea stars – Tre 2. Clam – Zooplankton – Algae – Se 3. Sharks – Crocodiles – Snakes – H (B) Give a reason for the following:	a urchin. () Hawks. ()				
	All food chains depend on sunlig	nt.				
2	(A) Choose the correct answer:					
	1. Any marine food chain doesn't inc	clude				
	a. algae.	b. zooplankton.				
	c. tiger.	d. shark.				
	2. Flooding which may destroy a des	a desert ecosystem, is due to				
	a. drought condition.	b. decreasing producers.				
	c. gentle rain.	d. heavy rain.				
	If algae are completely removed from negatively affected.	om a marine ecosystem, will be				
	a. clam only	b. zooplankton only				
	c. clam and zooplankton	d. clam, zooplankton and sea urchin				
	(B) Study the following food chain,	then complete the table below:				
	Algae ——→ Clam —	——≽ Sea star ——⊳ Shark				
	The living organism	Its type				
	1. Algae					
	2	Primary consumer.				
	3. Sea star					
	4	Top predator.				

3 Form a food chain on land environment from the following living organisms:

(Deer - Shark - Grasses - Lion)

Self-Assessment 14 till Lesson 2

 (A) Cross out the odd word: Primary consumers – Decomposers – Secondary consumers – Top predators. Fox – Clam – Rabbit – Eagle. Lion – Deer – The Moon – Grasses. (B) Give a reason for the following: Predators cannot feed directly on plants. 	((•••••))
 (A) Correct the underlined words: 1. Energy transfers when a secondary consumer feed on a producer. 2. All nonliving things can make their own food. 3. Producers need the energy of moonlight to make photosynthesis process. (B) What happens if? The number of primary consumers more than the amount of produce. 	(((ers.)
Study the following food web, then put () or (x) below: Sheep Crasses Lion Deer 1. Energy can transfer from the producer to the deer only. 2. Both sheep and deer are primary consumers. 3. The sheep is considered as a secondary consumer, if it eats the deer. 4. The lion is considered as a secondary consumer and a top predator. Self-Assessment 15 till Lesson 3		(((()))
 (A) Put (V) or (X): When the amount of water decreases in an ecosystem, animals suffer from difficulty breathing. Micoorganisms that live in water increases, when the water becomes cooler 3. Seabirds eat microorganisms that float on the surface of the seawater 	· ()))

(B) Give a reason for the following:
The food resources of seabirds will be negatively affected if the water of the
sea becomes warm.
2 (A) Complete the following sentences by using words inbetween bracket:
(microorganisms – small fishes – primary consumers)
1. Producers in the marine food chains, are
2. Small fishes are considered as, when they eat the producers.
3. Seabirds feed on to get energy.
(B) What happens to ?
The food resources of the seabirds when the seawater becomes cooler.
To form a right food chain, rearrange the following living organisms and draw the arrows that show the direction of energy transfer between them:
Small fishes Seabirds Microorganisms
Small fishes Seabirds Microorganisms
Small fishes Seabirds Microorganisms
Small fishes Seabirds Microorganisms Self-Assessment 16 till Lesson 4
Self-Assessment 16 till Lesson 4
Self-Assessment (16) till Lesson 4 1 (A) Complete the following using the words below:
Self-Assessment (16) till Lesson 4 1 (A) Complete the following using the words below: (microplastics – coral bleaching – plastic)
Self-Assessment (16) till Lesson 4 1 (A) Complete the following using the words below:
Self-Assessment (16) till Lesson 4 1 (A) Complete the following using the words below:

Marine living organisms cannot	: erature, coral reefs turn completely into differentiate between <u>water</u> and plastic n, so they cause harm to marine living		١.
(B) Give a reason for the following It is better to recycle plastic wa	g : ste materials than throwing them in wa	ter.	
"If there is no UV rays coming from affected by plastic waste materials"	the Sun, coral reefs will not be negative ". Do you agree or not, and explain your	ely answ	rer.
Self-Assessm	ent (17) till Lesson 5		
1 (A) Choose the correct answer:			
 If you remove coral reefs outside 	e water, it will		
a. die. b. survive.	c. increase. d. decrease.		
Coral reefs are considered as a	for many marine oganisms.		
a. primary consumers	b. secondary consumers		
c. predator	d. shelter		
3. Sharks will find, due to c	coral bleaching.		
a. big amount of food	 b. small amount of food 		
c. the same amount of food	d. enough amount of food		
(B) What happens to ?			
Algae when coral bleaching occ	urs.		
2 (A) Put (V) or (X):			
 Coral reefs turn completely into w seawater. 	vhite, due to rising temperature of	(١
All types of primary consumers ca if coral reefs are removed away.	an survive in a marine ecosystem,	()
Microplastics are non-toxic and h	ealthy.	()

Choose from the	following living organisms to form a food chain in seas	vater	
	rks – Algae – Tiger – Coral reefs – Parrot fish)		
***************************************		••••	
. (Self-Assessment 18 till Lesson 6		
(A) Put (V) or (X)):		
	ts at river banks, negatively impact the marine ecosystem.	(
Habitat restora of an ecosyste	tion projects, include repairing all natural resources m.	(
	oding may occur due to removing primary consumers aw	ay	
from an ecosys		(
(B) What happens	s to ?	(ects	
(B) What happens		ects.	
(B) What happens An animal spe	s to ? ecies if the community don't apply habitat restoration pro	ects.	
(A) Choose from	column (A) what suits it in column (B):	ects.	
(A) Choose from	column (A) what suits it in column (B):	ects.	
(A) Choose from (A) 1. Coral reefs	column (A) what suits it in column (B): (B) a. depend on grasses to get energy.	ects.	
(A) Choose from (A) Choose from (A) Choose from (A) 2. Seabirds	column (A) what suits it in column (B): (B) a. depend on grasses to get energy. b. depend on deers to get energy.	6.4	
(A) Choose from (A) 1. Coral reefs	column (A) what suits it in column (B): (B) a. depend on grasses to get energy.	6.4	
(A) Choose from (A) Choose from (A) Choose from (A) 2. Seabirds	column (A) what suits it in column (B): (B) a. depend on grasses to get energy. b. depend on deers to get energy. c. depend on microorganisms indirectly to get energy	6.4	

3 Correct the underlined words:

- 1. A coral reef rehabilitation project applied in Egypt coastal communities near the Red Sea, to restore the marine ecosystem.
- 2. It is important to replace <u>cloth</u> bags, to return a habitat environment to its natural state before harms was done by the formation of microplastics.
- The place in which we can take care of coral until they grow up, is know as hospital.

Model Exam

on Theme (1)

To	tal r	nark
e-		_
	20)

(A) Choose the correct answer:	(5 marks
1. The roots of a plant absorb fro	
a. oxygen gas	b. carbon dioxide gas
c. sugar	d. water
2. In the decomposition process, the ro	le of comes before the role of
a. predators – producers.	b. consumers – producers.
c. scavengers – decomposer.	d. decomposer – scavengers.
A hawk can eat, when snakes ecosystem.	
a. leaves	b. birds
c. grasses	d. grasshoppers
Which of the following substances are photosynthesis process?	e produced by the plant during
a. Glucose and oxygen.	b. Carbon dioxide and water.
c. Glucose and carbon dioxide.	d. Glucose and water.
(B) Give a reason for the following:	×
Sunlight is important for all living org	anisms.
(A) Write the scientific term of each of	the following: (5 marks)
 A type of living organisms that can probe by absorbing sunlight. 	oduce its own food
It is found in plant's leaves that gives energy from the sunlight.	
3. They are organisms that feed on the a	dead organisms bodies
They are living organisms that include return nutrients back to the soil.	

(B) What I	happens to.	?
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The food resources of the seabirds when the seawater becomes warm.

(A) Complete the following sentences:

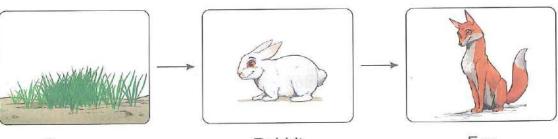
(5 marks)

- 1. If producers increase in an ecosystem, the primary will increase.
- 2. Maple seeds and dandelion seeds can travel by because they are
- 3. Predators living organisms may be for other living organisms.
- 4. The consumers that exist at the top of any food chain are called
- (B) To form a right food chain, rearrange the following living organisms and draw the arrows that show the direction of energy transfer between them:

Small fishes Seabirds Microorganisms

4 (A) Study the following food chain, then complete the table below:

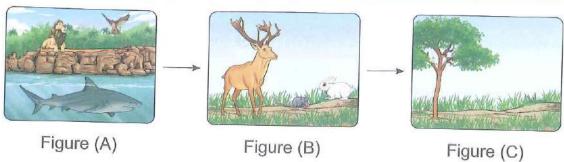
(5 marks)



Grasses Rabbit Fox

Situations	Results
When the number of rabbits increases.	the amount of decreases, while the number of increases.
2. When the amount of grassesand the number of foxes	the number of rabbits increases.
When all disappear or their role change in this food chain.	all foxes are move away to another ecosystem to search for food.
 When the ecosystem of this food chain is affected by sever drought condition. 	all die, because there is no water to make their own food.

(B) Study the following figures, then put (\checkmark) or (x) on the sentences below :



All living organisms in figures (A) and (B) can make their own food by photosynthesis process.
 Some predator living organisms are present in figure (B).
 Top predators are found only in figure (A).
 All living organisms in figure (A) can find a prey in figure (B), except shark.

on Concept (2.1)

Self-Assessment (19) On Lesson 1

(A) Correct the underlin	ed words :			
1. Sand is an example o	f liquid matter.		()
2. When the temperature	e of water decreases, it e	vaporates.	()
3. Water vapor is consid	ered as an example of se	olid matter.	()
(B) What happens to	?			
The state of water w	hen it is heated to a very	high temperature.		
2 (A) Put (V) or (X):		42		
1. A mass of matter is th	e space occupied by this	matter.	()
2. A matter may be colore	ed or colorless.		()
3. A matter has two state	es.		()
(B) Give a reason for the	e following :			
Oil is a matter.				
_				
	nto solids, liquids and ga			
(Milk – Carbon dioxide –	Sugar – Stone – Blood – (Oxygen – Oil – Coal	Water vap	or)
Solids	Liquids	Gases		
Self-A	ssessment 20 til	Lesson 2		
		10		
(A) Cross out the odd w	vord:			
 Air – Oxygen – Glass 	 Carbon dioxide. 		()
2. Wood – Plastic – Gla	ss – Air.		()
3. Oil – Milk – Water – C	Coin.		()

(B) Give a reason for the following:	
Gasoline is a liquid matter.	
2 (A) Convert the annulus I	
2 (A) Correct the underlined words :	
Particles of solid matter have a lot of spaces. Matter is another than the second solid matter have a lot of spaces.	()
2. Matter is anything that has color and volume.	()
3. A feather is an example for a hard matter.	()
(B) What happens to ?	
The temperature of water when it changes into ice.	
<u>)</u>	
Classify the three states of water (A), (B), (C) as shown in the	e figure according to :
	j .
	? (
(A) (B) (C)
Spaces between particles (Ascendingly).	")
2. Energy of particles (descendingly).	

Self-Assessment 21 till Lesson	2
	3
1 (A) Correct the underlined words :	
A matter consists of millions of tiny states.	()
To see some particles of a matter, we have to use a measuring Particles of liquids are tightly packed.	N20 1107
3. Particles of liquids are tightly packed.	()
(B) Give a reason for the following :	
Regular microscope was invented.	

_									
	105	A		Alexander of	Eal	atterior of	comt	OBERE	M
27.6	(4)	Compi	OTO	The	TOIL	owing	Sem	ences	
-			Control of the Control	THE R. P. LEWIS CO., LANSING	M. Acres, 40, 14	The second second second			-

- 1. Particles of matter can slide over each other, so they take the shape of their containers.
- 2. Particles of matter can move very quickly in all directions.
- 3. Both shape and volume of a coin is as it is a solid substance.

(B) What happens to ... ?

The speed of movement of solid particles after its melting.

B Look at the opposite figure, then put () or (X):



These two substances are in solid state.	()
2. We can distinguish between these two substances by smell.	()
Spaces between particles of the two substances are very narro	ow. ()
4. Particles of these two substances are similar to each other.	()

Self-Assessment 22 till Lesson 4

11 (A) Correct the underlined words:

Ice is the liquid state of water.

1. 100 to the inquies of the second	·	
2. To see the components of one blood cell, we	have to use	
a regular microscope.	()
3. To measure the length of your book, you can	use a balance scale. ()

(.....)

(B) What happens to ...?

The shape of an ice cube when it melts.

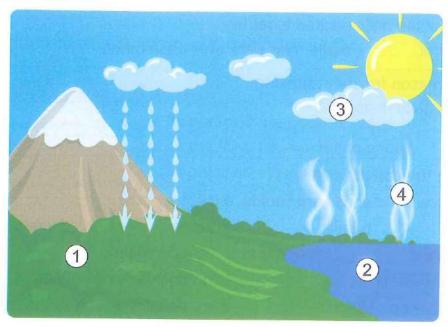
1. 2. 3.	Solar system Particles of v Give a reas	that is made up of large visible pant can be seen by using a microscopwood vibrate around their places. on for the following: spoon is transferred from a place	De. (ne
3 Ch	10000000	olumns (B) & (C) what suits it in o	:olumn (A) :	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	(A)	(B)	(C)	
	1. Glass	a. has no definite shape or volume.	Its particles have no energy.	3
	2. Water	b. has no definite volume and definite shape.	2. Its particles have low energy	y .
	3. Air	c. has on definite shape and definite volume.	Its particles have medium energy.	
		d. has definite shape and volume.	Its particles have high energy.	
	1	. 2	3	
		Self-Assessment 23 till	Lesson 5	
1 (A)	Put (//) or (/	K):		
		elp us see things that are too sma	100)
2. A	group of stu	udents stands very closely togethe	er in a small area may	
		nodel of a gas matter. an iron cube is the amount of spac	()
	akes up.	an action of span	()
(B) (Give a reaso	n for the following:		
I	A golden ring	j is considered a matter.		

2 (A) Correct the underlined words :		
1. Particles of liquids are arranged in a regular pattern.	()
2. Light is a form of matter.	()
3. A model is a copy that is different from a real thing.	()
(B) What happens if ?		
We try to examine the structure of a germ with our naked eye.		
Classify the following matter according to the arrangement of part regular pattern of random arrangement in the table below: (wood – water – plastic – oxygen – oil – carbon dioxide		
Regular pattern Random arrangement	t	
Self-Assessment 24 till Lesson 6		
11 (A) Put (V) or (X):		, ,
1. A rock is a matter as it has mass and volume.		()
Models are designed to let things be studied more hard.	8	()
3. Particles of a ruler are packed very close to each other.		()
(B) Give a reason for the following:		
Water vapor has on definite shape or volume.		
2 (A) Correct the underlined words :		
1. The amount of space occupied by a substance is related to its ma		
	()
2. The shape of liquids doesn't change whatever the container they	,	Λ.
are put in.	(
Particles of gases have a regular pattern.	()

(B) What happens to ...?

The speed of particles of water when it is heated.

3 Look at this picture which shows the water cycle in nature, then complete the following sentences:



- 1. Label (1) refers to a matter in state.
- 2. Label (2) refers to a matter in state.
- 3. Label (3) refers to a matter in state.

Model Exam

on Concept (2.1)

otal mark	
20	

1	(A) Complete the following sentences:	5 mar	ks)
	1. Matter is made up of tiny		
	2. Earth is a planet in the system.		
	3. To describe the particles of a matter in state by modeling balls, we should put the balls packed together.	re	
	4. Particles of matter can slide over each other.		
	(B) Give a reason for the following:		
	Salt is a solid matter.		
7	(A) Choose the correct answer :	5 mar	rks)
	All of these substances are liquids, except		
	a. oil. b. milk. c. stone. d. vinegar.		
	2. Gases have shape and volume.		
	a. definite – definite. b. no definite – no definite.		
	c. definite – no definite. d. no definite – definite.		
	3. The movement of particles of water are slower than that of		
	a. wood. b. plastic. c. air. d. gold.		
	4. We can use a model to study very large things such as		
	a. solar system. b. germs. c. microbes. d. viruses.		
	(B) What happens to ?		
	The arrangement of particles of water after its freezing.		
3	(A) Put (V) or (X):	(5 mar	ks)
	1. Most of ingredients of vegetable salads are in solid form.	()
	2. All matter have only one shape.	()
	3. Particles of water can move more freely than the particles of water vapor	. ()
	4. Particles of an aluminium spoon are similar to particles of a golden ring.	()
	(B) Cross out the odd word:		
	Coal – Carbon dioxide – Oxygen – Air. ()

4	(A) Write the scientific t	erm of each of the following:	(5 marks)
	1. A device used to exam	nine one tiny particle such as a blood cell.	()
	2. A copy that is similar t	o a real thing which we cannot observe with	
	our eyes.		()
	3. The state of water after	er its freezing.	()
	4. The state of matter that	at has a lot of spaces between its particles.	
	(B) Choose from column (A)	(B) what suits it in column (A):	
	1. Milk	a. Its particles are packed tightly.	
	2. Air	b. Its particles have medium energy.	
		c. Its particles move very freely.	

on Concept (2.2)

Self-Assessment 25 on Lesson 1	
(A) Complete the following sentences using the words below:	e and eticke
The material that is used in making roofs of desert homes and changes are different due to the difference in	
3. When we have to know the temperature of boiling water, we can	use the
(B) Give a reason for the following: Rains can't enter homes of cold weather regions.	
2 (A) Put (V) or (X):	
Balance can be used to measure the length of your friend.	()
2. Strong stones protect the roofs of desert homes from dust and dirt.	()
We may need to measure more than one property to identify an unknown matter.	()
(B) Mention the tool that is used in measuring the following prop	erties :
1. The mass of some oranges.	()
2. The volume of an amount of juice.	()
3 Look at the following picture, then complete the following senter	nces:
Home (1) Home (2) Home (3)
Ceramic tiles are used in making the roof of home () to from	protect it
Strong stones are used in making the roof of home () to and	
Leaves and sticks are used in making the roof of home () to protect it
from	

Self-Assessment 26 till Lesson 2

(A) Choose the correct answer:			
1. From the physical properties w	hich can't be measured by using	a special tools	
is	,		
a. volume.	b. color.		
c. mass.	d. length.		
2. Which of the following homes h	nave a flat roofs ?		
a. Desert homes only.			
b. Cold weather homes only.			
c. Desert homes and tropical ra	ainforest homes.		
d. Desert homes and cold weat	ther homes.		
3. When the particles of a matter	move with high speed, its	increases.	
a. mass	b. length		
c. volume	d. temperature		
(B) Give a reason for the following			
	per clips equals a mass of one k	ilogram of an	
orange.	oo. onpo oqualo a mass of one k	nogram or an	
(A) Correct the underlined words			
1. The mass of two kilograms of le	emon is measured by using		
a measuring cup.		()	
2. The volume of a liquids can be	₹.	()	
3. The temperature of a matter is considered from the chemical			
properties which can be measur	red.	()	
(B) What happens if ?			
A wet iron nail exposed to air fo			
	or a period of time.		
	or a period of time.		

B Look at the following figures, then complete the following sentences:





Tool (A)

Tool (B)

- 1. Tool (A) is used to measure the of different matter.
- 2. Tool (B) is used to measure the of different matter.
- 3. The measuring units that are used to describe the measurement of tool (A) are and

Self-Assessment 27 till Lesson 3

(A) Choose from column (B) what suits it in column (A):

(A)	(B)
1. Iron nail	a. sinks in water and doesn't attract to the
2. Piece of stone	magnet.
W.	b. floats on water and attracted to the
3. Piece of wood	magnet.
	c. sinks in water and attracted to the
	magnet.
	d. floats on water and doesn't attract to the magnet.

1.

2.

3.

(B) Give a reason for the following:

When we cut a piece from an apple, the mass of the whole apple will change.

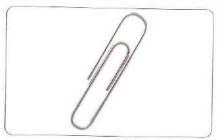
2 (A) Put (V) or (X):

- The attraction of different materials to the magnet is from chemical properties of matter.
- 2. The length of wood bar can be measured by a ruler. (
- 3. Ceramic tiles protect desert home roofs from dust and dirt. (

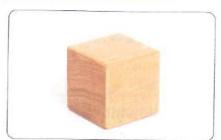
(B) What happens if	(B)	What	hap	pens	if		?
---------------------	-----	------	-----	------	----	--	---

We put a piece of plastic close to a magnet.

3 Look at the following pictures, then choose the correct answer:



A paper clip material (A)



A wood cube material (B)

1. If we put the two previous materials in water, which material sinks?.....

(material (A) - material (B))

- 2. If a magnet is put close to the two materials, which material doesn't attract to the magnet? (material (A) material (B))
- 3. We can measure the mass of each material by using a

(ruler - balance)

Self-Assessment (28) till Lesson 4

1 (A) Choose the correct answer:

- The used materials in making cooking pans are
 - a. copper and glass.
- b. copper and helium.
- c. glass and helium.
- d. copper and wood.
- 2. Both are sinking in water and attracted to the magnet.
 - a. stone and iron nail
- b. paper clip and iron nail
- c. paper clip and wood spoon
- d. plastic ruler and wood spoon
- 3. 1 kilogram of iron = 1 kilogram of cotton. This sentence means that both materials are equal in
 - a. mass only.

- b. volume only.
- c. volume and mass.
- d. mass and temperature.

(B) Give a reason for the following:

Glass is used in making eyeglasses.

2 (A) Cross out the odd word :	
 Shape – Mass – Rusting – Color. 	*
2. Kilogram – Liter – Cubic centimeter – Milliliter.	
3. Piece of wood – Iron nail – Piece of cork – Piece	of stone.

(B) What happens if ... ?

You put a piece of cork in a beaker filled with water.

3 Look at the following pictures, then complete the following sentences:







(.....)

(.....)

Tool (A)

Tool (B)

Tool (C)

1	. Tool	()	is made	of steel,	because	it is	and	
2	. Tool	()	is made	of rubbe	er, becaus	e it is	and	
3	. Tool	()	is made	of glass	, because	it is	and	

Self-Assessment 29 till Lesson 5

(A) Choose the correct answer :

(A) Choose the correct answer	•
1. Mass is a measurement of th	e
a. odor of flower.	b. length of wood bar.
c. amount of flour.	d. color of apple.
2. We can define volume as the	amount of that matter takes up.
a. space	b. time
c. temperature	d. water
3. From the people which use b	alances in their works are
a. cartographers.	b. bakers.
c. paleontologists.	d. space scientists.

(B) Give a reason for the following:

Cartographers create marine charts.

(Townson						
Ho III	///	Deed	1. 1		1 3	
17-41	(A)	Put	(V)	or	X	
			1.		100	- 14

- Air is a matter so it has mass.
 The ability to rust is one of the physical properties of matter.
- Cartographers can measure the mass of the Earth planet.

(B) What happens if ... ?

You touch a handle of a cooking pan made of copper and putted on gas oven.

3 Look at the following figures, then complete the following sentences using the words below:

(meter - mass - kilogram - architects - length - bakers)



Figure (1)

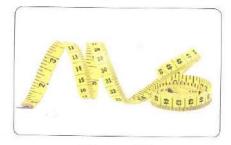


Figure (2)

- 1. Tool in figure (1) is used to measure and its measuring unit is
- 2. Tool in figure (1) is used by in their work.
- 3. Tool in figure (2) is used to measure and its measuring unit is
- 4. Tool in figure (2) is used by in their work.

Model Exam

on Concepts (2.1) & (2.2)

Tot	al m	nark
25	20	_

(A) Complete the following sentences using the words below:	(5 marks)
(rubber – increases – microscope – mass)	
 When an ice cube is exposed to the Sun, the speed of movement of its particles 	S
2. The of your school bag can be determined by a balance.	
3. A model of a germ helps us to see its shape without using a w	hich is

used to magnify tiny objects.

4. As is a waterproof material, we can use it in making gloves.

(B) Give a reason for the following:

Rusting of iron is considered from chemical properties of matter.

(A) Put (V) or (X):	(5 marks
1. If we put a wood cube in water, it will float.	()
2. Space scientists can't measure the mass of stars in the space.	(
3. Air particles are visible as they are very large particles.	(
4. Particles of wood are different from particles of plastic.	()
	 If we put a wood cube in water, it will float. Space scientists can't measure the mass of stars in the space. Air particles are visible as they are very large particles.

(B) What happens if ... ?

Water changes into ice.

(according to its shape).

(A) Choose from column (B) what suits it in column (A):

(5 marks)

(A)	(B)
1. Paleontologists	a. They measure lengths and widths of
2. Cartographers	building walls.
	b. They measure the size and shape of
3. Marine biologists	fossils.
4. Architects	c. They measure the mass of planets and stars.
	d. They are measuring and mapping Earth's surface.
	e. They measure the speed of sound from animals as whales and dolphins.

1	2	3	Λ
La socioni		J	T

(B) Correct	the unc	erlined	word	5 .
	/	COLUMN COLLEC			

- 1. Liquids don't take the shape of the container that it is placed in. (.....)
- 2. The mass of two kilograms of lemon is measured by using a measuring cup.

......

4 (A) Choose the correct answer:

(5 marks)

- 1. When water becomes ice, this means that it changes from state to state.
 - a. solid liquid

b. solid - gas

c. liquid - solid

- d. liquid gas
- 2. Oil takes the of its container.
 - a. volume
- b. shape
- c. color
- d. mass
- If we cut a tomato into two halfs, so the of one half of tomato will decrease to half.
 - a. color
- b. mass
- c. temperature
- d. shape
- 4. All the following can be used to describe matter, except
 - a. shape.
- b. color.
- c. price.
- d. texture.

(B) Look at the following pictures, then complete the following sentences:



Tool (A)



Tool (B)

- 1. Tool (.....) is made of steel, because it is hard and strong.
- 2. Tool (.....) is made of glass, because it is transparent and smooth.

Self-Assessments

on Concept (2.3)

Self-Assessment 30 on Lesson 1	
(A) Complete the following sentences using the words below:	
2. Ice is turned into water by process.	
3. When a matter is, its particles speed will decrease.	
(B) Give a reason for the following: The water takes the shape of the cup which exists in it.	***
2 (A) Correct the underlined words :	
1. When the temperature of ice increases, it melts and turns into steam.	
2. Wood is considered from solids, because it has definite <u>color</u> and shape.	
When a matter is heated, its particles move slower. (
(B) What happens if ?	
You leave some cubes of ice in a warm room.	

3 Look at the following pictures, then choose the correct answer:	
(A) (B) (C)	
1. The solid state of water is picture (A - B - C	;)

4. In which picture the particles of matter are close together? (A - B - C)

(A - B - C)

(A - B - C)

2. The liquid state of water is picture

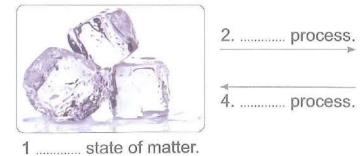
3. The gas state of water is picture

46

Self-Assessment 31 till Lesson 2

1	(A) Complete the following sentences:
	When ice gain energy, its temperature increases and changes into
	2. Freezing process can change water into which has definite and
	3. When the ice is exposed to temperature above 0°C, it will have definite but doesn't have definite
	(B) Give a reason for the following:
	When the temperature of liquid chocolate decreases, it will freez.
2	(A) Write the scientific term of each of the following:
	It is the energy which cause increasing in the temperature of matter causing its melting.
	2. State of matter which takes the shape and volume of its container. ()
	3. It is the point in which water is changed from liquid state to solid state at 0°C.
	()
	(B) What happens if ?
	An amount of melted chocolate is placed in a refrigerator.

3 Complete the following sentences:





3. state of matter.

5. These two processes are considered from changes.

Self-Assessment 32 till Lesson 3

(A) Complete the following sentences using the words below:

(compounds - heating - condensation)

- 1. Melting and evaporation take place by
- 2. Mixture and are formed of two matter or more.
- 3. We can change water vapor into water by using process.
- (B) Give a reason for the following:

We can separate salt that is dissolved in water by boiling water for a long time.

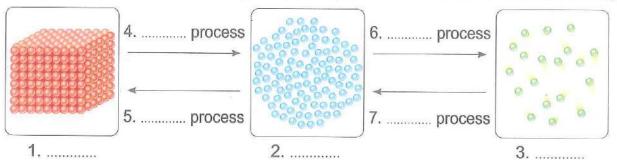
- 2 (A) Correct the underlined words:
 - 1. Freezing and evaporation take place by decreasing temperature. (.....)

 - 3. Fruit salad is considered as a compound.
 - (B) What happens to ... ?

The distance between particles of water vapor when it touchs a cold surface.

3 Use the following words to complete the following diagram:

(Evaporation - Water - Melting - Water vapor - Condensation - Ice - Freezing)



Self-Assessment 33 till Lesson 4

(A) Complete the following sentences using the words below:

(mass - shape - gas - properties)

- 1. When ice melts and changed into water, its will change.
- 2. Changing of matter from state to liquid state needs cooling.
- 3. In salty water, the and of salt and water don't change after mixing.

(B) Give a reason f	for the	following:
---------------------	---------	------------

Formation of ice from water needs cooling.

2 (A) Correct the underlined words:

- 1. In evaporation process, the particles of matter move slower and spread far from each other.
- 2. Changing of matter from liquid state to gas state needs cooling. (......)
- Mixing salt and papper form a <u>compound</u> which has the same properties of its components.

 (.....)

(B) What happens if ... ?

You increase the temperature of ice.

Look at the following figures, then choose the correct answer:



Salt figure (A)



Salty water figure (B)

- 1. The mass of salt in figure (B) equals gm. (20 30 50)
- 2. The mass of water in figure (B) equals gm. (20 30 50)
- 3. If we increase the mass of salt in figure (A) to 30 gm and mix it with the same amount of water, so the mass of salt in the new mixture will be gm.

 (20 30 50)
- 4. The taste of salt in figure (B) will

(remain as it is - disappear - change into another taste)

Self-Assessment 34 till Lesson 5

	1	(A)	Put	(V)	or	(X)	
--	---	-----	-----	-----	----	-----	--

- Atmospheric air has definite shape and volume.
 The change of water into water vapor is a physical change.
- 3. When an ice cube is exposed to the Sun, its particles move faster which cause it melts.

(B) Give a reason for the following	g:
-------------------------------------	----

Ash is a new substance that is formed after burning of a piece of paper.

(A) Write the scientific term of each of the following:

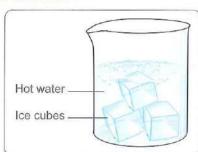
- 2. The change of matter from gas state to liquid state by cooling. (.....)
- The type of change that occurs when cutting an apple into small pieces.

 (.....)

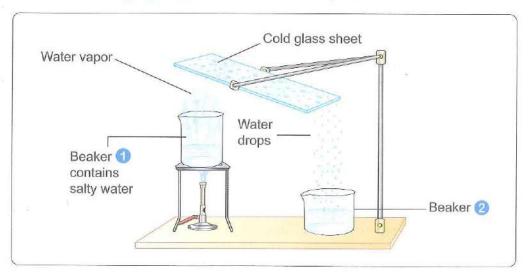
(B) Observe the opposite figure then choose the correct answer:

Which of the following changes takes place in this activity?

- a. The hot water take heat from the ice cubes.
- b. The hot water changes from liquid to solid.
- c. The ice cubes changes from solid to liquid.
- d. The ice cubes changes from solid to gas.



Look at the following figure, then answer the questions:



- 1. What is the process which takes place in beaker 1 ?
- 2. What is the process which takes place on the cold glass sheet?
- 3. What is the type of change which occurs in the two breakers?
- 4. What will be left in break ① after a long period of time?

Self-Assessment 35 till Lesson 6

1	(A) Choose the correct answer :		
	1. Both of processes need	increasing in temperature.	
		b. melting and freezing	
	The second secon	d. freezing and condensation.	
	Among matter which has definite sh	THE PARTY OF THE P	
		b. chair and table.	
		d. iron and oxygen.	
	Cutting a paper into small pieces ca		
		b. size only.d. shape and size.	
	Parent Series Se	u, shape and size.	
	(B) Give a reason for the following:	a physical change	
	Coloring a paper is considered as	a physical change.	
	·		
2	(A) Correct the underlined words :	x5-	
	1. Boiling of water changes it into solid	d state.	()
	2. Mixing baking soda with vinegar for	ms a mixture which has	
	new chemical properties.		()
	3. Producing ash from burning of wood	d is considered as	
	a physical change.	*	()
	(B) What happens if ?		
	You leave a piece of wet iron wire i	in air for a long period of time.	

3	Look at the following figure, then ans	swer the questions below:	
	Freeze, market and the second and th	Evaporation	
	1. Number 1 is the change of matter fro		
	2. Number 2 is the change of matter fro	m the state to the	state.
	3. Mention the type of change happen	ing in this figure?	

Self-Assessment 36 till Lesson 7

(A) Choose the correct	answer:					
1. All the following can p	pass through	n filters during	desalination of	water,		
except						
a. salts.		b. minerals.				
c. seaweed.		d. gases.				
2. On decreasing the te	mperature o	f water vapor, i	it			
a. freezes. b. c	ondenses.	c. melts.	d. evapo	rates.		
The change produced produced from		of coloring a p	aper is the sar	ne change		
a. rusting of iron.		b. mixing ba	king soda with	vinegar.		
c. mixing iodine with	starch.	d. melting of	wax.			
(B) Give a reason for th	e following	5				
The water of seas a			a mixture			
THE Water of Gode of	ia occano io	00110100100 00	or a mixture.			

2 (A) Put (V) or (X):						
1. After desalination pro	cess, the wa	ater that is retu	rned back to o	ceans		
is useful to marine life	€.			()		
2. Dehydration means th	at human bo	dy loses water.	*	()		
3. Gas substances alway	3. Gas substances always take the shapes and the volumes of their containers. ((B) What happens to?					
(B) What happens to						
Movement of ice par		it is exposed to	o Sun rays for	a short period of		
time.	aloloo, Wiloii	it io oxpooda ti	o dan rayo tor	a onore ported of		
Look at the opposite fig	gure, then ar	nswer the ques	stions below:			
During pouring the wate	r from conta	iner (a) into co	ntainer (b) :			
1. Does the volume of w	ater change	?				
a. Yes.	b. No.					
2. Does the shape of wa	iter change '	?	6/6/2			
a. Yes.	b. No.		20 cm ³	_		
3. What is the change th	at happens	to the				
water ?	•					
a. Physical change.	b. Chemic	cal change.	(a)	(b)		

Model Exam

on Theme (2)

Tol	al	m	ark
10	_	_	
	2	0	

				20		
1	(A) Choose the correct answer:			(5 marks)		
	1. We can measure the mass of an i	ce cube by using a .				
	a. thermometer. b. ruler.	c. measuring cup.	d. balance.			
	2. Ice can be turned into water by					
	a. cooling. b. freezing.		d. heating.			
	3. Both and are	0.750	22 73 9.1	volume.		
	a. wood – oxygen	b. milk – iron	•	080807 4 2 000		
	c. wood – iron	d. milk – oxygen				
	4. To separate sand only from salty water, we can use process.					
		c. melting				
	(B) Give a reason for the following:					
	Sometimes we need to use an ele	ectron microscone				
	Companies we need to doc an en	oction mioroscope.				
	***************************************	7.3				
2	(A) Complete the following sentence	es using the words l	below:	(5 marks)		
	(ceramic tiles –	globe – rough – so	lid)			
	You can describe the texture of su texture".	gar crystals by sayir	ng "it has	crystal		
	We can study the location of countries by using a which represents a model of the Earth.					
	3. The distance between particles of water is very small in case of its state.					
	4. In Earth's polar zone, people use in building their home roofs to protect					
	them from rains.	-				
	(B) What happens if ?					
	A piece of chocolate is exposed to	Sun ray for a perio	od of time.			
3	(A) Cross out the odd word:	3		(5 marks)		
	1. Milk – Oil – Ice – Apple juice.		7)		
	2. Rusting of iron – Coloring a paper	– Burning of wood –		/		
	Burning of a paper.)		
	3. Mixing salt with water – Mixing vine	egar with water – Mi				
	with water - Mixing vinegar with ba	aking soda.	()		
	4. Cutting a piece of paper – Melting	of wax – Freezing o	f water			
	 Rusting of iron. 		()		

(B) Write the scientific term of each of the following:

 A state of matter that its particles move faster than solids and have a definite volume only.

(.....)

2. It is the amount of space that matter takes up.

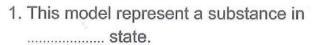
(.....)

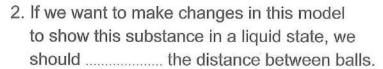
4 (A) Choose from column (B) what suits it in column (A):

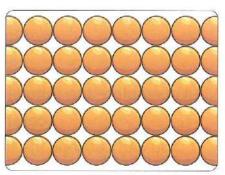
(5 marks)

(A)	(B)	
1. Milk	a. its particles are packed tightly.	
2. Air	b. its particles have medium energy.	
3. Wood	c. its particles move very freely.	
o. 7700a	d. its particles don't move at all.	

- 1.
- 2.
- 3.
- (B) Look at the opposite model that shows the particles of a substance, then complete the following sentences:



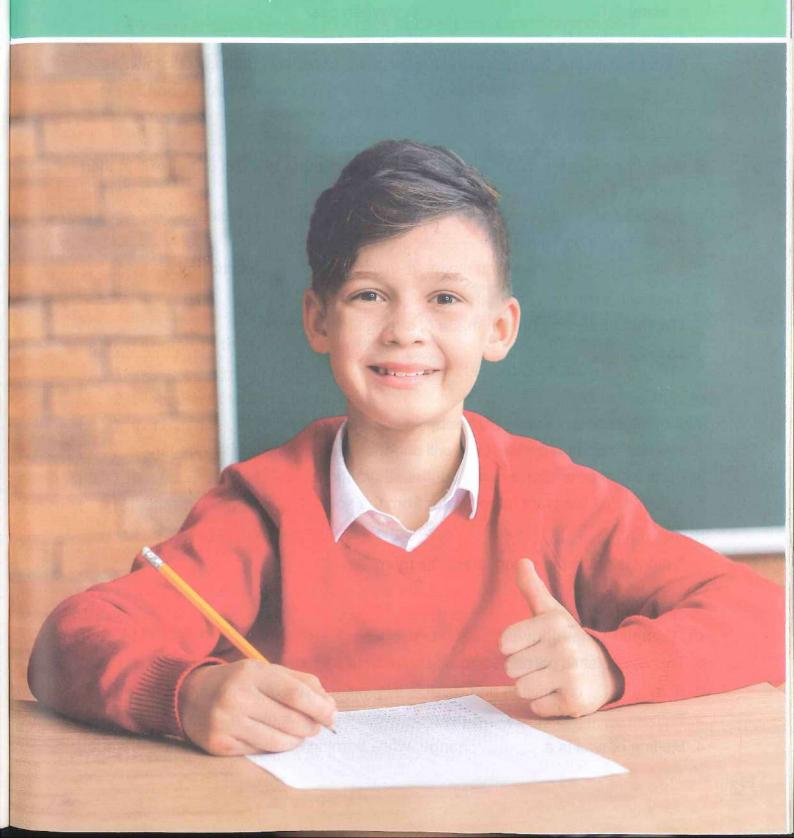




PART 2

Final Examinations:

Model Exams On The First Term.



El-Moasser Final Examinations

Model Exam 1

1	(A) Choose the correct answer:			
	1. Plants take from the air to	make its own food.		
	a, water	b. oxygen gas		
	c. carbon dioxide gas	d. sugar		
		rganisms and non-living things is know	vn as	i
			9010 535	
	a. digestive system.	b. respiratory system.		
	c. ecosystem.	d. vascular system.		
	When the marine habitats are dest food webs is	troyed, the number of living organisms	in th	eir
	a. increased. b. decreased.	c. not changed. d. doubled.		
	4. Some liquids come out of a	during its eruption.		
	a. star b. wooden piece	c. volcano d. plastic piece		
	(B) Give a reason for the following:			
	The roof of desert home is made o	f strong stones.		
		*		-
2	(A) Put (V) or (X):			
	1. We can describe a solid matter by		()
	2. The mass and properties of oil will		()
	3. Particles of all matter are in a conti		()
	4. Xylem helps the plant to get water	from the soil.	()
	(B) What happens if ?			
	A plant is placed in a dark place for	r many days.		

3	(A) Complete the following sentence	es:		mental
	1. Throwing plastic garbage and wast	te materials into a river causes water		
		organisms cannot produce their ow		
		ants, gases can't move in or out of the		
		, while burning of wood is acl		
		,	9	

 (B) Cross out the odd word : 1. Oil – Milk – Water – Wood. 2. Roots – Stems – Leaves – Sunlight. 	*	() ()	
(A) Correct the underlined words:			
1. Chlorophyll in plant's roots absorbs e	nergy from the sunlight.	()	
2. Coconut seeds disperse by wind.		()	
3. Flowers of plants produce root hairs that	. ()		
4. Respiration process helps the plant to			
(B) Choose from column (B) what suits			
(A)	(B)		
1. Carbon dioxide	a. is not a matter.		
2. Sand	b. is a liquid matter.		
3. Gasoline	c. is a gas matter.		
(8)	d. is a solid matter.		
1	3		
Model E	xam 2		
(A) Complete the following sentences	# *		
1. When we heat an ice cream, it	and becomes liquid.		
2. Digestion of food forms a new	which has new		
3. We can usein making hamm		nd strong.	
4. You can use a to measure th			
a to measure its temperature) .		
(B) What happens to ?	(B) What happens to ?		
The speed of particles of an ice cube when it is exposed to the Sun.			
(A) Write the scientific term of each of	the following:		
It is the number of organisms of one ty		ı. ()	
2. The animal that is eaten by another a		()	
The liquid substance that plants, anima		· ()	
4. A part of the plant that fix it in the soil		()	

Human needs to	eat some animals a	nd plants.	
(A) Choose from co	lumn (B) what suits	it in column (A) :	
(A)		(B)	
Condensation a. is the change of water from solid state to liquid state.			I state to liquid state.
2. Melting	b. is the change of	f water from gas st	tate to solid state.
3. Freezing	c. is the change of		
4. Evaporation	d. is the change of		
1			state to solid state.
1	2	3	4.
 Due to rising of wainto green. Tree trunks are cli (A) Form a food chain 	mb stems.		(
	ne sentences below		
	(Duck - Gr	asses – Fox)	
(1)		(2)	(3)
***************************************	····· — · ·····	·······	
 a. This food chain do b. Living organisms to chain are called c. Grasses change the photosynthesis pro 	hat break down mat	terials of dead org	
(B) Cross out the odd	l word :		
1. Carbon dioxide ga	s – Water – Oxvaen	gas – Sunlight	(
		gao caringint.	(
2. Wood – Iron – Oxy	gen – Flastic.		(

Model Exam 3

1	(A) Put (✓) or (X):		
	1. Air enters plants through roots.	()
	2. People and engineers must share scientists in restoration ecology.	()
	3. If coral reefs are destroyed, many marine food chains will be destroyed.	()
	4. Vinegar and frozen vegetables have definite shape.	()
	(B) What happens if ?		
	A magnet is put close to an iron nail and a plastic spoon.		

		*******	•••
2	(A) Complete the following sentences using these words:		
	(extinction – overfishing – shelter – toxic –predator)		
	Healthy natural resources include clean air, healthy food, water and suitable		
	2. The human activity that directly decreases the marine population is known as	'n	
	3. Habitat loss does not only cause a decrease in the marine population but is one of the main reasons for	t also	it it
	4. When a sea turtle eats a jellyfish, this means that the sea turtle is a living organism.		
	5. Plastic waste materials are very harmful to marine organisms, because t and sharp.	ney a	are
	(B) Correct the underlined words:		
	1. There are tiny holes on the stem to allow gases passes into the plant. ()
	2. Plant's leaves help it to be fixed in the soil. (
3	(A) Write the scientific term of each of the following:		
	1. It is a process by which a matter is changed from solid to liquid state. ()
	2. The property of matter which is measured by the measuring cup. ()
	3. A model of the whole world that is made in the shape of a large ball. ()
	1 Thoy are consumers which feed on secondary consumers ()

(B) Give a reason for the following:	in a warm room
Ice is turned into water when it is placed	in a warm room.
4 (A) Choose the correct answer:	
The primary source of energy for all living	organisms on the Earth is
	een plants.
9	otosynthesis process.
2. The marine food web usually started with	EL CONTROL CON
	pplankton. d. parrotfish.
3. The movement of particles of water are s	(a)
a. wood. b. plastic. c. air.	
4. Steel is used in making hammers, because	3
a. flexible. b. smooth. c. har	
nutrients and water it everyday, he used carton box to hide it from his brother, a plant will survive ? And why: a. Yes, because it has nutrients and water b. No, because it needs air and light. c. No, because plant doesn't need water a d. Yes, because it can survive without sur	fter many days, do you think that this r. and soil. alight.
Model Exar	
(A) Write the scientific term of each of the	following :
 The process of producing new plants. 	()
 A group of living organisms that can produ Flying living organisms that build their nes mountain cliffs and dive deeply into the se 	its on the top of
4. The state of matter that has definite volum	ne and shape.
(B) Give a reason for the following:	X
Balloons and blimps filled with helium always	ays rise up in the air.

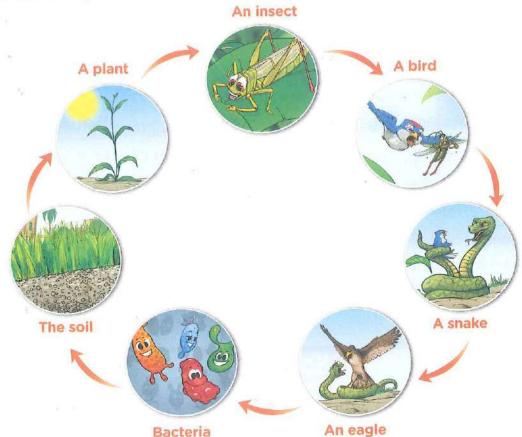
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Hiller W.	/ n \	Ph	1 0		F V	
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100	1537	Put	W	U	1001	
V V						

- 1. Healthy habitats provide living organisms with clean air, healthy food and water.
- 2. When particles of a matter absorb thermal energy, they move slower.
- 3. Dead organisms don't need energy.
- 4. From the chemical properties of helium is that it is not flammable.

(B) What happens if ...?

Plants have no stems.

(A) Study the following figure, that shows the recycling nutrients back into the soil, then complete the sentences below:



- 1. Photosynthesis process is done by, so it is a producer.
- 2. Decomposition process is done by, so they are decomposers.
- 3. The insect is a consumer, because it eats the plant.
- 4. The large meat-eating animal is the
- 5. When the eagle dies, its nutrients return back to the soil with the help of

(B) Choose from column (B) what suits it in column (A):

(A)	(B)
1. Sunlight	a. is absorbed by the roots of the plant.
2. Soil	b. is necessary for plant's growth.
3. Water	c. is not a basic need for plant growth.
4. Oxygen	d. a gas which is produced during photosynthesis process.
	e. a gas which is the plant uses during photosynthesis process

		e. a gas which is the	plant uses durin	g photosynthesis prod	cess.
	1	2	3	4	
4	(A) Choose the	correct answer:			
	1. When the pla	ant seed begins to grov	and makes spro	uts this process is calle	d
	a. respiration	n. b. germination.	c. absorption.	d. reproduction.	
	2. Decompose	rs always the	e soil.		
	a. pollute	b. damage	c. benefit	d. harm	
	3. The amount is	of energy that transfe	ers between livin	g organisms in a food	l web,
	a. 10%	b. 90%	c. 30%	d. 100%	
	4. We can use	a model to study very	y large things su	ch as	
	a. solar syste	em. b. germs.	c. microbes.	d. viruses.	
	(B) Look at the	opposite figure, the	n put (/) or (x)		
	1. Label 1 refe	rs to a matter in liquid	state. () 000	(2)
		rs to a matter in solid s			T
		rs to a matter that its sl			F)
	volume don't		. (Viene	

Model Exam 5

1 (A) Choose the correct answer:

particles of matter (3).

4. Particles of matter 1 move slower than

1.	The	volume	of	one	liter	of	water	has	a	mass	of	
----	-----	--------	----	-----	-------	----	-------	-----	---	------	----	--

a. one gram.

b. one kilogram.

c. one milliliter.

- d. one cubic centimeter.
- 2. When the water is heated, its particles
 - a. move slower.

- b. move faster.
- c. move with the same speed.
- d. do not move.

3. Salt can be se	parated by	of salty water.			
a. melting			d. condensati	on	
4. In plant's leave	es, light energy is	converted into .	energy durir	ng	
photosynthesis					
a. sound	b. electric		d. kinetic		
		at represent par	rticles of three state	es of matte	r,
then put (V)	or (X):			_	
(1)		(2)	(3)	1	ì
	esents solid matte			()
	esents liquid matt		5.5° (O) 14 m ov	()
		en the particles	of figure (2), it may	1)
change into so		anaray than no	articles of figure (3)	()
4. Particles of fig	ure (1) have more	e energy man po	articles of figure (3).	(,
(A) Complete the	e following senter	nces:			
in it, is known	as		all living organisms		
			dered as a safe gas		
			can't move in or out		t.
	n for the following				
	perature of ice cu		thev will melt.		
WHOTI the term	porduciro or ioo ou				

	entific term of ea	ch of the follow			
 They are char its structure. 					
	nges in matter whi		eversible and don't	affect)
2. It is the proces	nges in matter whi ss by which matte	ch are usually r	eversible and don't (liquid state to		
gas state.	ss by which matte	ch are usually r r changes from	eversible and don't (liquid state to		
gas state. 3. A tool is used		ch are usually r r changes from ngth of wall.	eversible and don't (liquid state to (

	Plant's leaves don	't contain chlorophyll.	•••		
	A) Put (v) or (x) :				
		nsumers use carbon dioxide gas for making their food. ((
		effected by climate changes, pollution and human activities. ((
		sible as they are very large particles.	((
	. Iron spoon is attra		(
		mn (B) what suits it in column (A):			
	(A)	(B)			
	Photosynthesis process	a. it is a process in which the blood carry oxygen to all body parts.			
	Decomposition process	 it is a process in which the nutrients are returned to the ecosystem. 			
	4	 it is a process through which producers make their own food. 			
	1	2			
		Model Exam 6			
(A	() Complete the foll	owing sentences :			
1.	The food of plant is photosynthesis pro	a type of which is made in their by cess.			
2.	Sunligth energy colleaves.	nverts and into glucose inside the plant's	>		
3.	Heavy rain causes	which destroys desert ecosystems.			
According to hardness of matter, a sponge and a feather are examples of matter, while a coin and a brick are examples of matter.					
(B) Give a reason for	the following:			
	The roof of tropical	rainforest home is made of leaves and sticks.			
(A) Choose the correc	t answer :			
1.	Which of the followi	ng matter has a definite volume and shape ?			

c. Ice.

d. Air.

a. Water.

b. Milk.

In the presence of Sun and w growth without the need of		erminate at the beginning of							
a. soil. b. rocks.	c. insects.	 d. dry paper towel. 							
3. Which of the following living of	organisms can make th	neir own food ?							
a. Hawks. b. Mice.	c. Pine trees.								
4. If all grasses were removed of	completely from an eco	system, rabbits in this							
ecosystem will									
a. increase. b. decrease	. c. die.	d. not be affected.							
(B) Cross out the odd word:									
Plastic – Vinegar – Iron – Alu	uminium.	()							
- Indone Vintegal II of I	i lastic – villegai – non – Ataminiani.								
3 (A) Put (✓) or (X):									
1. We can differentiate between	sugar and flour by tex	cture. ()							
2. When a solid matter gains the	ermal energy, it will ch	ange into liquid state. ()							
3. Plants and humans are simila									
4. Human can eat plants and ar		()							
(B) What happens to ?									
The microorganisms if the se	eawater hecomes war	m							
The microorganisms if the si	eawater becomes war								
(A) Write the scientific term of	each of the following	:							
1. The building unit of matter.	9	. ()							
2. It is a measure of the amount	t of matter.	()							
3. It is the process by which ma	tter changes from gas	state to liquid state.							
		()							
Parts of the plant where sun!	ight allows carbon dio	xide to combine with water							
during photosynthesis proces	SS.	()							
(B) Choose from column (B) wh	at suits it in column (A):							
(A)	1 1 1 1 1 1	(B)							
1. Photosynthesis process	a. It produces nutrier	its, which is improtant for							
2. Respiration process	soil fertility.								
3. Decomposition proces	b. It produces light, w	which is important for plants.							
	c. It produces oxyger for breathing.	n gas, which is important							
	d. It produces carbon important for plant	n dioxide gas, which is s.							
1 2									

Model Exam 7

	(A) Write the scientific term of each of the following:			
	1. A human activity that leads to decreasing the number of fish			
		,		,
)
	The process that takes place inside plants through which			
	,	***********)
	A property of matter by which we can distinguish between hot and sold chiests.			
			•••••)
	(B) What happens to ?			
	The temperature of a matter if the speed of its particles decreases.			

				**
	·····		•••••	• •
2	(A) Put (V) or (X):			
	1. We can use thermometer to measure the temperature of a hot cup	of tea.	()
	2. If we increase the temperature of some pieces of ice, they will melt		()
	3. Photosynthesis process takes place in the plant roots.		()
	4. The first link in any food chain is a consumer.		()
	(B) Give a reason for the following:			
	Chlorophyll in plant's leaves has an important role in photosynthesis	s proces	SS.	

3	(A) Complete the following sentences :			0
	1. In a food chain, the energy flows from consumer to a secon	ıdary		
	consumer.			
	2. Particles of liquid matter can move more faster than matter	and mo	ve	
	slower than matter.			
	3. We can use gas to fill blimps, because it is lighter than			
	4. When two substances combine and form a new substance, this new	v substa	ance)
	is called a			

(B) Mention the state of matter which form the following mixtures by using the words below:

(Solid and liquid - Gas - Solid - Liquid)





1. materials

Air



2..... materials

Oil in water

3..... materials



4..... materials

(A) Choose the correct answer :

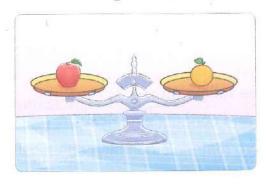
- 1. All of the following materials can reach the plant's leaves, except
 - a. nutrients.

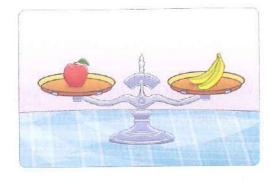
b. carbon dioxide gas.

c. water.

- d. soil.
- 2. A snake is a predator for mice, while snake is considered as a prey for
 - a. rabbit.
- b. frog.
- c. eagle.
- d. deer.
- 3. Which of the following two living organisms don't have direct food relationship between them?.....
 - a. Parrotfish and shark.
- b. Butterflyfish and shark.
- c. Triggerfish and shark.
- d. Eagle and shark.
- 4. Oil takes the of its container.
 - a. volume
- b. shape
- c. color
- d mass

(B) Look at these figures then choose the correct answer:





- a. The mass of the two bananas is greater than the mass of the orange.
- b. The mass of the apple is smaller than the mass of the orange.
- c. The mass of the orange is smaller than the mass of one banana.
- d. The mass of the orange is equal to the mass of the two bananas.

Model Exam 8

	(A) Put (V) or (X) :		
	1. Phloem transports food materials downward from the leaves to o	ther parts	
	of the plant.	. ()
	2. In an ecosystem that contains rabbits, mice, eagles and snakes of	only, if snake	S
	disappear completely, so eagles will disappear completely.	()
	A desert food chain doesn't contain any type of fish.	()
	4. A model of an airplane shows us how it flies up into the air.	()
	(B) Give a reason for the following:		
	Human can use helium gas safely.		
	· · · · · · · · · · · · · · · · · · ·	******************************	
5	(A) Chaosa the correct answer:		
	(A) Choose the correct answer:	of money con	
	1. Condensation changes the matter from state to		
	a. solid – liquid b. liquid – gas c. gas – liquid d. liquid – s	olid	
	2. The green plants can make their own food through		
	a. roots. b. leaves. c. stems, d. flowers.		
	3. Any food chain started with		
	a. insects. b. plants. c. fungi. d. bacteria.		
	4. If the climate change is suitable, the population of a species will		
	a. increase. b. decrease. c. die. d. not be aff	ected.	
	(B) What happens if ?		
	A liquid changes into gas. (according to the spee	d of particles	s).
			•••
3	(A) Write the scientific term of each of the following:		
	1. The ability of materials to transfer heat and conduct electricity.	()
	2. A matter that is formed when two or more materials combine chem		,,
		()
	3. Narrow holes spread on the surface of plant's leaves that allow		
	gases to come in and out the plant.	()
	4. They are organisms that feed on the dead organisms bodies		
	and break them down into smaller pieces.	()

(B) Cross out the odd	word:			
Water – Gasoline	– Gold – Milk.		32	()
(A) Complete the fol	lowing sentence	es using the words	below:	
(sc	olid – liquid – ga	as – space – parti	cles)	
The state of matter shape is	r that has a defir	nite volume, but it o	loesn't have	a definite
2. Volume is the amo	unt of th	nat matter takes up).	
3. We can classify the	e states of matte	er into liquid,	and	
4. Matter is made up	of tiny			
(B) Choose from colu	ımn (B) what sui	its it in column (A)	:	
(A)	n Taylar we	(B)		
1. Carbon dioxide	a. is a solid ma	tter.		
2. Sand	b. is a liquid ma			
N.	c. is needed for	r photosynthesis.		
1	2			
	Model	Exam 9		
(A) Choose the corre	ct answer:			
1. We can measure t	he volume of a l	iquid by all the foll	owing units	except
a. kilogram.		b. milliliters.		
c. cubic centimete	rs.	d. liters.		
2. Among chemical of	changes which is	occured in cooking	ıg is	P ₂
a. cutting vegetable	es.	b. boiling of water.		
c. melting of choco	olate.	d. baking a cake.		
3. The kind of stems	that extend und	erground are calle	d	
a. climb stems.	tubers.	c. runners.	d. wood st	ems.
4. Many insects are	considered as			
a. producers.		b. decomposers.		
c. primary consum	iers.	d. secondary cor	sumers.	
(B) What happens if	?			
		e hot climate for se	veral month	is.

15	(A) Complete the following sentences by using the words below:		
	(chemical – physical – rough – odor)		
	Both of odor and texture of matter are considered from the pro of matter.	pertie	S
	2. You can identify the of a juice by using the sense of smell.		
	We can describe the texture of sugar crystals by saying "it has crystal texture".		
	4. The ability of a piece of iron to rust is from the properties of ma	itter.	
	(B) Give a reason for the following:		
	Both melting and freezing processes are considered as physical chang	es.	
3	(A) Put (V) or (X):		
	1. Plant's stem has hairs that absorb oxygen gas from the air.	()
	2. Birds are secondary consumers, because they eat insects that feed		ð
	on plants.	()
	3. Microorganisms are producers that small fish feed on to get energy.	()
	4. The speed of water vapor particles is greater than that of water particles	s. ()
	(B) Look at the opposite model that shows the particles of a substance, then complete the following sentences:		
	This model represent a substance in		X
	state.	\sim	
	2. If we want to make changes in this model	\leftrightarrow	
	to show this substance in a liquid state,	$\langle \rangle$	
	we should the distances between		X
	balls.	V	V
4	(A) Write the scientific term of each of the following:		
	The property of matter which is measured by the balance. ()
	2. The state of water when its temperature is located between 0°C and 100	o°С.	-
	()
	3. A substance that is produced from the plant during photosynthesis proce	ess	(5
	and provides it with its needed energy. ()
	4. The consumer who eats another animal		`

	(B) Put letter (P) in front of physical properties and letter (C) in front of chemical properties of the different matter below:				
	The white color of milk.	()	
	The ash produced from burning a paper.	()	
	The large crystals of salt particles.	()	
	4. The odor of perfume.	()	
	Model Exam 10				
1	(A) Put (✓) or (X):				
	1. Light is important for plant growth.		()	
	2. Water and carbon dioxide are absorbed by plant's root to help the	plant			
	to grow.		()	
	3. Light and sound are forms of matter.		()	
	4. Liquids don't take the shape of the container that they are placed	in.	()	
	(B) Correct the underlined words:				
	1. Humans can get their food from air and animals.	()	
	2. Oxygen gas is absorbed by plant's leaves to make photosynthesis				
	process.	()	
2	(A) Write the scientific term of each of the following:				
	1. A device used to examine one tiny particle such as a blood cell.	(,)	
		(200	
		()	
	4. A part of the plant that fix it in the soil.	()	
	(B) Give a reason for the following:				
	Wood has definite shape and volume.				

3	(A) Complete the following sentences:				
	1. In the matter, the volume and shape don't change.				
	2. Water evaporates when it is exposed to a temperature.				
	3. You can use a ruler to measure the of your book, while a balance to measure its	you ca	ın usı	е	
	4. If an iron cube and an amount of cotton have the same mass, so	the vo	lume		
	of ic smaller than that of the				

(B) What h	appens to?
------------	------------

The size of a balloon when you blow it up.

4 (A) Choose the correct answer:

- 1. We can measure the mass of a cube of ice by using a
 - a. thermometer.

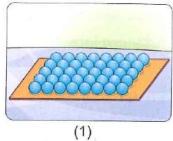
b. ruler.

c. measuring tape.

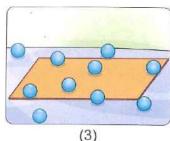
- d. balance.
- 2. We can identify milk by determining its
 - a. color and texture.
- b. shape and odor.

c. color and taste.

- d. color and size.
- 3. To separate sand from salty water, we can use process.
 - a. filtration
- b. evaporation
- c. melting
- d. freezing
- 4. The of plant get water and nutrients from the soil.
 - a. roots
- b. stems
- c. leaves
- d. flowers
- (B) The following figures show three models of particles of some matter related to our planet Earth. Observe the figures carefully, then complete the following sentences:



(2)

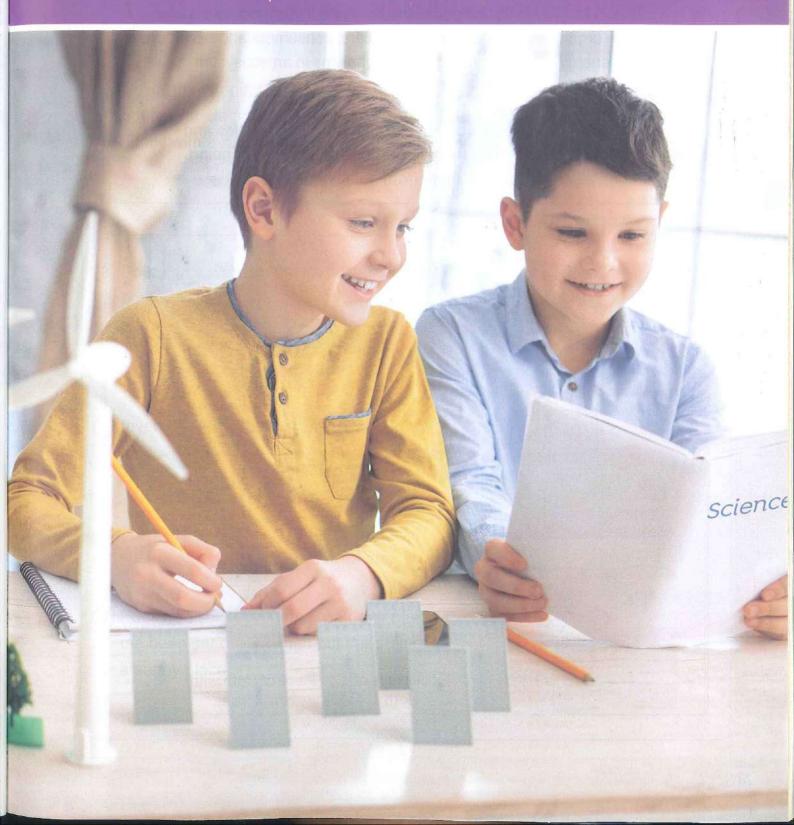


- 1. Beads of figure could represent the particles of a rock on the Earth's surface.
- 2. Beads of figure could represent the particles of river water on the Earth.

PART

Projects:

- Unit One Project.
 Interdisciplinary Project.
 Unit Two Project.



UNIT ONE Project

Build a Miniature Ecosystem

- In this project, you will build a "Miniature Ecosystem" which means a very small ecosystem using simple tools and materials.
- Your miniature ecosystem will include some nonliving things and also some different living organisms that represent producers, consumers and decomposers to show how energy transfers among living organisms in an ecosystem.

Note

In your miniature ecosystem, you have to get real living Beetles and Earthworms that you may find them in gardens or your surrounding environment, also you can buy them from pets shops.



Steps

1 Cut the plastic bottle into two halves using the scissors as shown.



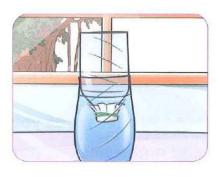
2 Cover the opening of the upper part of the bottle with the small piece of cloth and fix it tightly with a rubber band.



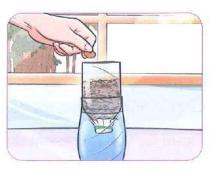
3 Pour some water in the lower part of the bottle.



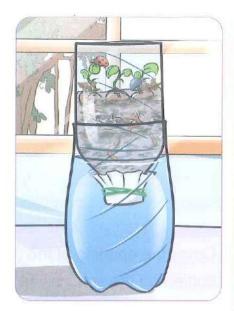
4 Invert the upper part of the bottle into the lower part as shown (the water should cover the piece of cloth).



5 Put some soil in the upper part and plant the bean seeds in it, then put the project in a sunny place.



6 When the bean seeds begun to grow up, add the dead leaves, earthworms and beetles into the upper part.



7 Close the upper part of the bottle using the piece of cloth with small holes and fix it tightly with a rubber band.



- Now, you have made your miniature ecosystem that contains different living organisms and nonliving things, where:
 - Soil and water are nonliving things.
 - Bean plants represent producer organisms.
 - Beetles represent consumer organisms.
 - Earthworms represent decomposer organisms.
 - Dead leaves represent dead organisms.

INTERDISCIPLINARY Project

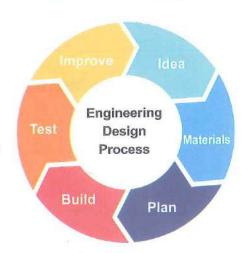
Waste Not, Want Not

- ▶ Plastic is a common material that we always use in our lives in many purposes shuch as :
 - Packing and storing our food.
 - Transporting water.
 - · Manufacturing some medical tools.
- ▶ However, much of the plastic we use are thrown away. Plastic bags and water bottles are the most items that people throw into the environment.



- As you have learned that plastic is one of the most harmful waste because it is especially dangerous to animals, for example :
 - In the River Nile, scientists have found that most of the fish have swallowed plastic caused by human pollution and this leads to death of fish.
- Humans try to decrease the bad effects of plastic on the environment in different ways, such as:
 - Collecting plastic trash along the shore.
 - Reusing the plastic items instead of throwing them.
- ▶ In this project, use the steps of the Engineering Design Process that you have learnt in the previous educational grades to create a design of a "Mini-garden" at your home using empty plastic bottles.





Idea

Create a "Mini-garden" using empty plastic bottles.



Materials

You may use the following materials to build up your design:



Empty plastic bottles



Scissors



Thread



Wax gun



Soil



Different seeds

Plan —	
	7.7
•••••••••••••••••••••••••••••••••••••••	22
	35

	52
	55
	55

Draw your "Mini-g	arden" design	•			
500 ST					
*					
*					
	in 197		*		
Improve					
				ull decima	
Write down your i	deas to improv	⁄e your "Mi	nı-garde	n" aesign	1

Temperatura de la compansión de la compa					

unit two Project

Slippery Sands

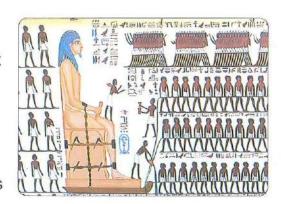
In this project, you will make a research about how water can be used to make sand more slippery.

Read the following paragraph:

 Scientists and historians have been wondering how the ancient Egyptians were able to move very large blocks of stones across the desert sands.
 Many scientists and historians have tried to find the answer of this question.

· Historians :

- Historians have looked at one of the ancient Egyptians wall painting that shows how did they move a huge statue across the desert sands.
- In the wall painting, historians have observed a person pouring a liquid from a jar in front of the sled. Historians believed that this was related to a holy ceremony.



· Scientists:

- Scientist looked at the same painting in a different way.
- Scientist had a theory that may be ancient Egyptians were adding water to the sand to make the sand more slippery, so they could move the huge statue more easily because the friction between the sled and the wet sand were decreased.



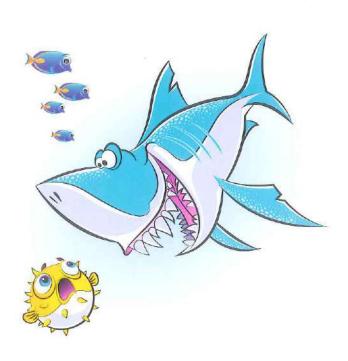
 Scientists said that sand particles are rough, but when water is added to sand, this makes the sand particles come close and stick together and this leads to decreasing the friction between sand particles and any object move on it.

Use the previous paragraph or o evidence and scientific explanat	nline sources to write your claim, ion for the following question.
? The Question	
Does adding water to the sand r	make the sand more slippery ?
My Claim	
My Evidence	
My Scientific Explanation	





SCIEN







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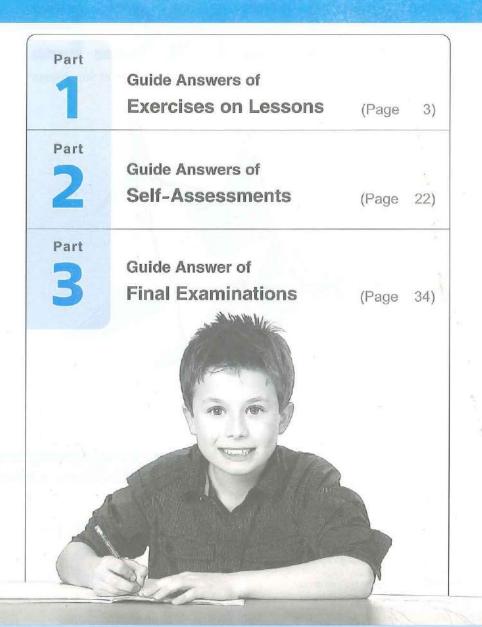








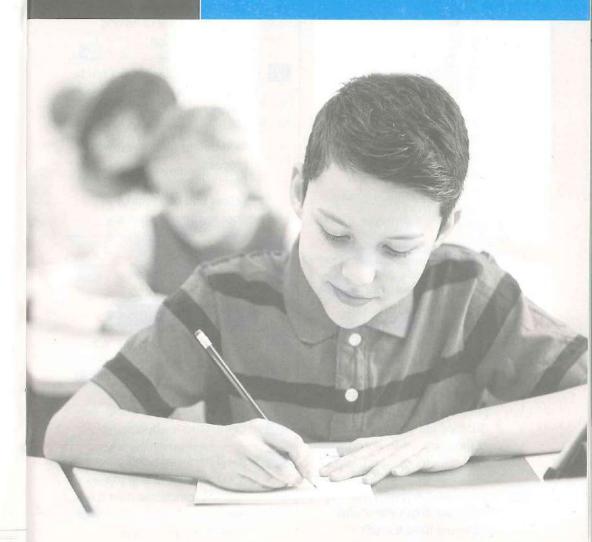
Contents



Part

1

Guide Answers of Exercises on Lessons



Concept (1.1)

Exercises on Lesson 1

- 2. a 3. b 4.c 5 b 6. b 7. c 8.c 9. a 10. b
- 2. (1) 3. (1) 4. (1) 5. (√) 6. (√) 7. (√) 8. (x) 9. (%) 10. (1)
- 1. leaves roots.
 - 2. water nutrients roots.
 - 3. photosynthesis leaves.
 - 4. roots leaves
 - 5. the Sun
 - 6. sugar leaves
 - 7. water
 - 8. the soil
- 1. Carbon dioxide gas.
 - 2. Water.
- 3. The stem.
- 4. Photosynthesis process.
- 5. Oxygen gas. 6. The Sun.
- 1. Oxygen gas (all items are plant's needs to grow, while oxygen gas is released during photosynthesis process).
 - 2. Sunlight (all items are parts of the plant, while sunlight is important for plant growth).
- 6 1. Because the roots help the plant to get water and nutrients from the soil.

- 2. Because it helps the plant to make its own food.
- 3. Because:
 - · Some plants only grow in the water.
 - · Some plants grow on other plants instead of having roots in the soil.
- 1. Water and nutrients will not be carried from the roots to the leaves.
 - 2. Plants can't make their own food during photosynthesis process.
 - 3. Plant's leaves will be vellow and can't make photosynthesis process.
- 2. c 3. a 4.d
- 9 (b).

Exercises on Lesson 2

- 2. d 3. b 4.a
- 2 1. (%) 2. (1) 3. (1) 4. (1) 5. (*)
- 3 a. germination. b. soil
- 1. It will germinate and grow well. 2. It will germinate and make
 - sprouts for a while then it will die.

5 1. figure (A) – figure (B). 2. soil.

Exercises on Lesson (3)

- 1 1. c 2. d 3. d 4. c 5. b 6. c 7. a 8. d 9. c 10. d
- 1. d 2. e 3. b 5. a 4. C
- 3 1. (%) 2. (%) 3. () 4. (%) 6. (\mathscr{L}) 7. (\checkmark) 8. (\checkmark) 5. (%) 9. (×) 10. (×) 11. (√)
- 1. Photosynthesis process.
 - 2. Plant's leaves.
 - 3. Xvlem.
- 4. Stomata.
- 5. Carbon dioxide gas.
- 6. Sugar.
- 5 1. Photosynthesis
 - Carbon dioxide
 - 3. dark green
- 4. plants
- 5. roots
- 6. the stem
- 7. leaves
- 8. gases
- 6 1. carbon dioxide gas oxygen
 - 2. water roots.
 - 3. the energy 4. xylem
 - 5. stomata
 - 6. water sunlight
 - 7. stomata
 - 8. water the leaves.
- 1. To allow gases to move into and out of the plant.

- 2. Because they can make photosynthesis process.
- 3. Because they transport water and nutrients to the plant's leaves.
- 1. Gases can't move into or out. the plant's leaves and the plant will die.
 - 2. The plant can't make photosynthesis process and it will die
- 1. Carbon dioxide gas
 - 2. Sunlight
- 3. Sugar
- 4. Oxygen gas 5. Water
- 6. Minerals

- 2. b 3. c 4. b
 - 5. c 6. a 7. b 8. c
 - 9. c 10. b 11. a 12. b
- 2 1. (√) 2. (x) 3. (*) 4. (%)
 - $5. (\checkmark) 6. (x) 7. (x) 8. (\checkmark)$
 - 9. (*) 10. (*) 11. (\sqrt) 12. (\sqrt)
 - 13. (1)
- 3 1. Root hairs.
- 2. Plant's roots.
- Plant's stem. 4. Climb stems.
- 5. Runners.
- 6. Potato plant.
- 7. Chlorophyll.
- 8. Phloem.
- 9. Oxygen gas.

- 1. roots
- 2. root hairs
- 3. wood
- 4. tubers
- 5. runners
- 6. upright
- 7. oxygen 9. leaves
- 8. narrow 10. Phloem
- 1. root hairs water
 - climb stem tubers
 - 3. fix nutrients
 - 4. wood upright
 - 5. runners.
 - 6. narrow needles.
 - 7. sugars proteins
 - 8. photosynthesis phloem.
 - 9. chlorophyll the sunlight
- 6 1. Because plants produce oxygen gas during photosynthesis process which is important for all living organisms to breathe.
 - 2. Because chlorophyll absorbs the energy of sunlight that helps the plant to make photosynthesis.
 - 3. To increase the amount of water that the plant absorbs.
- 1. The plant can't absorb the energy of sunlight and can't make photosynthesis.
 - 2. The plant can't absorb water from the soil and also can't be fixed in the soil.
 - 3. It can't make its own food and will die.

- 8 a. red.
- b. xylem.
- 9 (c)

- 3. b 4 C
- 6. b 5. c

2 a

- 7. c 8. d
- 10. b 9. d
- 2. (1) 3. (*) 4. (%) 5. (1) 6. (1) 7. (1) 8. (1)
- 1. seeds
- 2. arteries
- 3. heart
- 4. one way
- 5. Xvlem
- 6. Arteries
- 7. chemical
- 8. photosynthesis
- 1. Glucose.
- 2. Arteries.
- 3. Veins.
- 4. Circulatory system.
- 5. Transport system.
- 6. Flowers.
- 7. Plant reproduction.
- 1. glucose
 - 2. the leaves the nose the mouth
 - 3. the heart blood vessels.
 - 4. glucose the body cells.
 - 5. circulatory 6. leaves
 - 7. xylem phloem.
 - 8. heart xylem roots
 - 9. light chemical
 - 10. seeds reproduce.
 - arteries veins.

- 6 1. Because flowers produce seeds for the plant that help the plant to reproduce.
 - 2. Because it transports blood and other fluids through the body.
 - 3. Because xylem carry water and nutrients from the roots to the leaves.
- 1. Plants can't get their needed energy to survive and grow.
 - 2. Humans can't transport blood and other fluids throughout the body.
 - 3. The plant can't produce seeds for reproduction.
- 8 a. 1) Artery. 2) Vein. b. (2) - (1)
 - C. C

Exercises on Lesson 6

- 2. d 3. a 4. C 5. d
- 2 1. b 2. d 3. a 4. c
- 2. (%) $3.(\checkmark)$ $4.(\checkmark)$ 6. (×) 7. (√) 5. (x)
- 4 1. water 2. spiny 3. apple
- 1. coconut maple (dandelion) 2. spines. 3. light seeds.

- 6 1. Because seeds can stick on animals fur or being eaten by animals and come out with their stool.
 - 2. Because they are light seeds.
 - 3. Because their seeds are spiny seeds.

Model Exam on Concept (1.1)

- 1 (A) 1. d 2. b 3. c
 - (B) It will germinate and begins to grow well.
- 2 (A) 1. (✓) 2. (✓) 3. (※) 4. (✓)
 - (B) Because they are spiny seeds.
- (A) 1. Water. 2. Flowers.
 - 3. The Sun. 4. Potato plant
 - (B) 1. figure (A) figure (B). 2. soil
- 4 (A) 1. c 2. d 3. b 4. a
 - (B) 1. leaves.
- 2. chemical.

Concept (1.2)

- 2. d 3. b 4. b
- 6. d 7. b 5. C 8. c
- 9. a 10. d 11. b 12. c
- 13. a 14. b 15. c
- 2 1. e 2. c 3. d 4. a

- 3 1. (*) 2. (√) 3. (√) 4. (√) 5. (*) 6. (√) 7. (√) 8. (*)
 - 9. (🗸) 10. (🗴) 11. (🗸)
- 1. Ecosystem.
 - 2. Photosynthesis.
 - 3. Light energy. 4. The Sun.
 - 5. Plants.
- 6. Glucose.
- 7. Carbon dioxide gas.
- 8. Oxygen gas.
- 9. Plants.
- 5 1. ecosystem
- 2. energy
- 3. plants (grasses)
- 4. water carbon dioxide gas
- 5. food.
- 6. Sun
- 7. glucose sugar oxygen gas
- 1. To get his needed energy and to do his activities.
 - Because it is absorbed by plants leaves, to make their own food and grow, then humans and animals eat these plants.
- The plants cannot make their own food by photosynthesis process.
 - The hawk moves away to search for food in another ecosystem.
- 8 1. (A) and (B) (C)
 - 2. (B) 3. (A) and (C)
 - 4. (B) and (C)

- 1 1. b 2. d 3. b 4. C 6. b 7. C 8. c 5. d 9. c 10. b 11. d 12. b 14. b 13. c 15. d 16. a
- 2 1. c 2. d 3. a
- 3 1. (\(\sigma\) 2. (\(\pi\) 3. (\(\pi\) 4. (\(\sigma\) 5. (\(\pi\) 6. (\(\sigma\) 7. (\(\sigma\) 8. (\(\pi\) 9. (\(\sigma\) 10. (\(\pi\) 11. (\(\sigma\))
- 4 1. producers.
 - 2. Decomposers.
 - 3. Decomposition process.
 - 4. Food chain.
 - 5. prey.
- 6. predator.
- 5 1. producers
 - 2. glucose photosynthesis
 - 3. consumers 4. plants
 - 5. decomposers 6. primary
 - 7. recycling
- 1. Because consumers cannot make their own food.
 - Because decomposers return nutrients of dead organisms back to the soil.
- The secondary consumers will move away to another ecosystem to search for food or they will die.
 - Dead organisms will not be decomposed, and their nutrients will not return back to the soil.

- 8 (1) Grasses (2) Duck (3) Fox
 - a. tertiary b. decomposers
 - c. light chemical
- 9 1. a plant 2. bacteria 3. primary 4. eagle
 - 5. bacteria

Exercises on Lesson 3

- 11 1. d 2. b 3. c 4. b 5. c 6. b 7. c
- 2. (★) 2. (★) 3. (√) 4. (★) 5. (√) 6. (√) 7. (√)
- 1. producers
 - 2. secondary consumer
 - 3. primary consumer
- 4 1. d 2. c

Exercises on Lesson 4

- 11 1.d 2.c 3.b 4.c 5.d 6.a
- 2 1. (%) 2. (\$\sqrt{}\$) 3. (\$\sqrt{}\$) 4. (\$\sqrt{}\$) 5. (\$\sqrt{}\$)
- 1. food 2. food web 3. primary consumers
- 4 1. b 2. d 3. c 4. d 5. b
- 5 b

- 1 1.d 2.c 3.b 4.a
- 2 1.c 2.b
- 3 1. (√) 2. (√) 3. (x) 4. (x) 5. (√) 6. (x) 7. (√) 8. (√) 9. (x)
- 1. Decomposition process.
 - 2. Scavengers.
 - 3. Decomposers.
 - 4. Recycling process.
- 5 1, food web.
 - 2. scavengers decomposers
 - producers.
 - 4. decomposers scavengers.
 - 5. water.
- 6. fungi.
- 7. recycle
- 6 Because scavengers feed on dead bodies by breaking them into small pieces.
- 7 All dead bodies will not be decomposed, and its nutrients will not return back to the soil.
- 8 1. (√) 2. (√) 3. (√) 4. (√) 5. (✗) 6. (√)
- 9 d

- 2. d 3. d 4 d 5. a
- 2 1. (√) 2. (×) 3. (√) 4. (×) 5. (%)
- 3 1. Ecologist. 2. Plants. 3. Prairie

Model Exam on Concept (1.2)

- 1 (A) 1, b 2, a 3, d 4. C (B) All dead organisms will not be decomposed and its nutrients will not return back to the soil.
- 2 (A) 1. (**x**) 2. (√) 3. (**x**) 4. (√)
 - (B) 1. Because desert ecosystem contains few members of producers.
 - 2. Because scavengers feed on dead bodies by breaking them into small pieces.
- 3 (A) 1. Water.
 - 2. glucose oxygen
 - 3. primary
 - 4. decomposers.
 - (B) d
- (A) 1. the Sun.
 - 2. Recycling process.
 - 3. Prey.
- 4. Food chain.

- (B) 1. producers
 - 2. secondary consumer. 3. primary consumers.

Concept (1.3)

Exercises on Lesson (1)

- 1 1. c 2. b 3. a 4. b 5. C 6. d 7. b 8. a 9. b 10. c 11. b 12. d
- 2 1. c 2. b
- 2. (%) 3. (x) 4. (\sqrt) 6. (1) 7. (1) 8. (1) 5. (X) 9. (*) 10. (*) 11. (~)
- 1. Pollution. 2. Overfishing. 3. Top predators.
- 5 1. pollution.
 - 2. increases.
- 3. Overfishing
- 4. floods
- 5. top predators
- 6 1. Because they will not find enough food to eat.
 - 2. Because sharks feed on different fish that depend on algae to get their food.
- 7 1. They will pollute water and the marine organisms will be negatively affected.
 - 2. The water of the lake decreases due to its evaporation and may be completely disappears.
 - 3. The number of primary consumers increases and the amount of producers decreases.

- 8 1. grasses foxes
 - increases decreases
 - 3. rabbits
- 4. grasses
- 9 1. algae 2. butterflyfish
 - 3. hawks

Exercises on Lesson (2)

- 2. d 3. d 4 b 6. c 5. a 7. d
- 2 1. (√) 2. (×) 3. (√) 4. (×) 5. (1) 6. (1)
- 1. Tertiary consumers.
 - 2. Decomposers.
 - 3. Energy.
- 4 1. prey 2. primary 3. decomposers 4. energy
- **5** 1. (**x**) 2. (**x**) 3. (√) 4. (√) 5. (1)

Exercises on Lesson (3)

- 2. c 3. d 4. a 5. d 6. c 7. b 8. a 9. c
- 2 1. (30) 2. (1) 3. (1) 4. (1) $5. (\checkmark) - 6. (\checkmark) \ 7. (\checkmark) \ 8. (\checkmark)$
- 1. Population.
 - 2. Population change.
 - 3. Seabirds.
 - 4. Microorganisms.

- 1. forests oil 2. populations 3. smoke 4. increase
 - 5. microorganisms
- 1. Because pollution negatively affects all living organisms in food webs.
 - 2. Because fire forests produce smoke that causes difficulty breathing of animals.
- 6 1. The population of this species will decrease.
 - 2. The microorganisms will move away to a cooler water and also fish that feed on microorganisms.
- 1. (*) 2. (\sqrt) 3. (\sqrt) 4. (*) 5. (x)

- 1 1, c 2. d 3. b 4. a 6. b 7. d 8. c 5. c 9. b 10. b 11. c
- 2. (34) 3. (1) 4. (36) 5. (√) 6. (≭) 7. (√) 8. (≭) 9. () 10. ()
- 1. Coral bleaching.
 - 2. UV rays.
 - 3. Microplastics.
 - 4. Recycling.
 - 2. overfishing 1. shelter
 - 3. extinction
- 4. predator
 - 5. toxic

PART

- 1. Because humans feed on fish that depend on algae in coral reefs for food.
 - Because when the water temperature rises the coral reefs get rid of algae from their tissues.
 - Because rising of water temperature cause coral bleaching, and microplastics are toxic and sharp.
- **6** 1. (**x**) 2. (**x**) 3. (√)

Exercises on Lesson 5

- 1 1. c 2. a 3. d 4. a 5. d 6. d
- 2 1. d 2. c 3. b
- 3 1. (**x**) 2. (√) 3. (√) 4. (**x**) 5. (**x**)
- 4 b

Exercises on Lesson 6

- 1 1. d 2. b 3. c 4. a 5. d 6. b 7. a 8. d
- 2 1. (√) 2. (*) 3. (√) 4. (√) 5. (*) 6. (√)
- 1. Habitat restoration projects.
 - 2. Nursery.
 - 3. Habitat restoration.

- bleaching nursery grow up dying.
- 5 1. Because restoration projects take a lot of money and a long time.
 - 2. Due to eroding of riverbanks.
- 6 1. (x) 2. (x) 3. (√) 4. (x)
- 7 b
- 8 c

Model Exam on Concept (1.3)

- 1 (A) 1. b 2. d 3. c 4. d
 - (B) The number of primary consumers increases, and the amount of producers decreases.
- 2 (A) 1. (¥) 2. (√) 3. (√)
 - (B) 1. Because fire forests produce smoke that causes difficulty breathing of animals.
 - Because, when the water temperature rises the coral reefs get rid of algae from their tissues.
- (A) ecosystem shelter marine environment.
 - (B) Grasses → Deer → Lion
- 4 (A) 1. Nursery 2. Microplastics 3. Population
 - (B) 1. white
- 2. sunlight

Concept (2.1)

Exercises on Lesson 1

- 1. b 2. a 3. d 4.a 5. c 6. d
- 2 1. c 2. d 3. b
- 3 1. (√) 2. (⅙) 3. (⅙) 4. (√) 5. (⅙) 6. (⅙)
- 4 1. Matter. 2. Temperature. 3. Solid.
- 5 1. solid gas 2. solid
 - 3. hot cold 4. soft hard
 - 5. solid gas
- 6 1. Wood (all items are liquids, while wood is solid).
 - 2. Vinegar (all items are solids, while vinegar is liquid).
 - Coal (all items are gases, while coal is solid).
- 1. Because it has mass and volume.
 - Because rubber is a soft matter, while iron is a hard matter.
- 8 It becomes a gas.
- 9 1. d
- 2. c

10 d

Exercises on Lesson 2

- 11.a 2.c 3.b 4.b 5.b 6.a 7.d 8.d
- 2 1. b 2. c 3. a
- 3 1. (√) 2. (x) 3. (x) 4. (x) 5. (x) 6. (x) 7. (√) 8. (x)
- 4 1. Solid. 2. Liquid. 3. Gases. 4. Gases.
 - 5. Measuring tape.
- 5 1. solid liquid 2. solid
 - 3. liquid gas 4. liquid.
 - 5. length 6. solid
- 1. Because it has definite shape and volume.
 - 2. Because it is a solid matter.
 - 3. Because it is a gas matter.
 - 4. Because it is a solid matter.
- 1. It will change according to the shape of each container.
 - 2. It will not change.
- **8** 1. (√) 2. (√) 3. (x) 4. (x)

- 11 1. d 2. b 3. c 4. a 5. c 6. d
- 2 1. (√) 2. (√) 3. (√) 4. (*) 5. (√) 6. (*) 7. (√) 8. (√)

- 1. Solid.
- 2. Particles.
- 3. Microscope. 4. Solid.
- 5. Liquid.
- 1. particles
- 2. solid
- 3. solid
- 4. solid gas
- 5. liquid shape
- 1. Because it is a gas.
 - 2. Because they are not held together.
- 6 1. It will have a definite shape.
 - 2. It will increase.
 - 3. Particles cannot be seen.
- 1. (B)
 - 2. (C) (A) (B)
- 3. (C)

- 2. b 5. a
- 3. a
- 4. b
- **2** 1. (**x**) 2. (√) 3. (**x**)
 - 5. () 6. ()
- 3 1. Gas.
 - 2. Electron microscope.
- 1. increase.
- 2. high
- 3. particles
- 4. solid
- 5. regular
- 1. To study them in an easier way.

- 2. To see the components of one particle.
- 1. It will increase.
 - 2. It will increase.
- 7 1. solid
- 2. increase

Exercises on Lesson 5

- 2. a 3. c 4. a 5. b
- 2 1. (34) 2. (30) $3.(\checkmark)$ $4.(\checkmark)$ 5. (1) 6. (1)
- 3 1. Globe.
- 2. Model.
- 4 1. shape volume.
 - 2. solar
- 3. globe
- 4. microscope
- 5. volume shape.
- Because their particles are arranged randomly.
- 6 It will be organized (have a regular pattern).
- 7 1. (1) 2. (2) 3. (3) 4. (3)

Exercises on Lesson 6

- 2. d 3. b
- **2** 1. (**x**) 2. (√) 3. (√) 4. (√)
- 3 1. liquid.
- 2. space 4. particles.

4. a

- 3. solid gas.
- 5. containers

- Because it has a definite volume and its shape is not definite.
- It becomes solid.
- 6 1. (x) 2. (√) 3. (x) 4. (x)

Model Exam on Concept (2.1)

- (A) 1. solid
- 2. liquid.
- 3. particles 4. regular
- (B) Because their particles are arranged randomly.
- (A) 1. a 2. a 3. b 4. a
 - (B) It will increase.
- 3 (A) 1. (※) 2. (√) 3. (※) 4. (※)
 - (B) 1. Wood (all items are liquids. while wood is solid).
 - 2. Vinegar (all items are solids, while vinegar is liquid).
- 4 (A) 1. Measuring tape.
 - 2. Particle.
 - 3. Microscope, 4. Gas.
 - (B) 1. c
- 2. a

Concept (2.2)

Exercises on Lesson 1

- 2. d 3. d 4. a 5. b 6. d
- 1. c 2. a 3. d 4. b
- $1.(\checkmark) 2.(\checkmark)$ 3. (*) 4. (%) 5. (*) 6. (V) 7. (x)

- 1. Ceramic tiles.
 - 2. Strong stones. 3. Volume.
 - 4. Mass.
- 5. Length.
- 5 1. Solid liquid 2. mass
 - ceramic tiles rains.
 - 4 climate
 - 5. balance thermometer
 - 6. length mass.
- 1. To protect the desert home from dust and dirt
 - 2. To protect the tropical rainforest home from animals getting inside.
- 7 The rain will be collected on the top of cold weather homes.
- 8 1.A 2. C 3. B 4. A
- 9 d

Exercises on Lesson 2

- 2. b 3. c 4. b
- 6. a 7. b 5. d
- 9. a 10. c
- 2 1. (*) 3. (%) 5. (*) $6.(\checkmark) \ 7.(\checkmark) \ 8.(\checkmark)$
- 1. Physical properties.
 - 2. Chemical properties.
 - Volume.
 - 4. Mass.
 - 5. Temperature.
- 4 1. physical
 - 2. odor
 - 3. rough 5. mass
- 4. chemical 6. one thousand

8. d

7. temperature

- 1. Because rusting of iron is a change that happens to iron when it interacts with air and water.
 - Because quickly moving particles produce more heat energy which cause increasing in temperature.
- The paper becomes ash.
 Its temperature will decrease.
- 7 1. P 2. C 3. P 4. P 5. C 6. P 7. P

- 1 1.b 2.d 3.c 4.a 5.b 6.a
- 2 1. (√) 2. (*) 3. (√) 4. (√) 5. (*) 6. (√)
- 3 1. doesn't attracted floats
 - 2. sinks attracted
 - 3. mass
- 4. iron cotton.
- The iron nail will attract to the magnet, while the plastic spoon will not attract to the magnet.
 - 2. The piece of cork will float on the surface of water.
- 5 1. B 2. A 3. A 4. B

Exercises on Lesson 4

1 1.a 2.b 3.d 4.c 5.d 6.b 7.c 8.a 9.d

- 2 1. e → B 2. d → D 3. b → E 4. a → C 5. c → A
- 3 1. (\(\sqrt\) 2. (\(\mathbf{k}\) 3. (\(\mathbf{k}\) 4. (\(\mathbf{k}\)) 5. (\(\sqrt\)) 6. (\(\sqrt\)) 7. (\(\mathbf{k}\)) 8. (\(\sqrt\))
- 4 1. Helium gas. 2. Conduction. 3. Rubber.
- 5 1. chemical 2. helium air.
 - 3. flammable poisonous
 - 4. physical
 - 5. heat electricity.
 - 6. cooking pans wood.
 - 7. steel hard strong.
 - 8. rubber.
 - 9. smooth transparent.
- 1. Because helium is a light gas which means it is lighter than air.
 - 2. Because helium is not flammable or poisonous.
 - 3. Because wood and plastic are bad conductors of heat.
- 7 1. The blimp will rise up in the air.
 - 2. It will not conduct electricity.
- 8 1. Copper. 2. Helium 3. Rubber 4. Steel.
 - 5. Glass.

Exercises on Lesson 5

1 1. b 2. a 3. d 4. c 5. b 6. c 7. b

- 2 1. (\$\sqrt{}\) 2. (\$\sqrt{}\) 3. (\$\sqrt{}\) 4. (\$\sqrt{}\) 5. (\$\sqrt{}\) 6. (\$\sqrt{}\) 7. (\$\sqrt{}\)
- 3 1. Measuring cup.
 - 2. Paleontologists.
 - 3. Cartographers.
 - 4. Map.
- 4 1. length 2. volume
 - 3. speed
- 4. fossils
- 5. experiments. 6. satellites
- To measure correct lengths and widths of boards before building walls.
 - To measure the volume and mass of ingredients before start baking.
 - 3. To help tourists find their way.
- 6 1. bakers.
 - 2. space scientists.
 - 3. builders.
 - 4. cartographers.

Model Exam on Concept (2.2)

- (A) 1. b 2. a 3. d 4. a
 (B) Because helium is not flammable or poisonous.
- 2 (A) 1. chemical 2. temperature 3. climate 4. mas
 - (B) 1. Cartographers.
 - 2. Physical properties.

- 3 (A) 1. (※) 2. (√) 3. (※) 4. (√)
 - (B) The iron nail will attract to the magnet, while the plastic spoon will not attract to the magnet.
- 4 (A) 1. c 2. a 3. d 4. b (B) 1. Rubber. 2. Steel.

Concept (2.3)

- 1 1. b 2. c 3. d 4. c 5. a 6. d 7. b 8. b 9. b 10. d
- 2 1. d 2. c 3. a
- 3 1. (%) 2. (\$\sqrt{}\$) 3. (\$\sqrt{}\$) 4. (\$\sqrt{}\$) 5. (\$\sqrt{}\$) 6. (\$\sqrt{}\$) 7. (\$\sqrt{}\$) 8. (\$\sqrt{}\$) 9. (\$\sqrt{}\$)
- 4 1. Melting process.
 - 2. Solid state.
 - 3. Liquid state.
 - 4. Gas state.
- 1. melts
 - 2. increasing
 - 3. melt. 4. solid liquid
 - 5. solid volume shape
 - 6. liquid
 - 7. gas volume shape.
- 8. close together. 9. increase.
- 1. Because the temperature of ice increases, so it will melt and becomes liquid.

- - 2. Because it has definite volume but doesn't have definite shape.
 - 3. Because air is considered as a gas state of matter.
- 1. The mass of tomatoes will not change.
 - 2. They will melt and become liquid water.
 - 3. The particles of water will move faster.
- 8 1. 1 it has definite volume and shape.
 - 2. 3 it has definite volume but doesn't have definite shape.
 - 3. 2 it doesn't have definite shape and volume.
 - 4.1 3

- 2. d 3. c 4. b 6. c 7. b 8. d
- 2 1. (%) 2. (1) 3. (1) $5. (\checkmark) 6. (x) 7. (\checkmark) 8. (x)$
- 1. Physical changes.
 - 2. Melting process.
 - 3. Freezing process.
 - 4. Liquid state.
- 1. increase
- 2. temperature
- 3. decrease
- 4. melting
- 5. freezing
- 6. particles

7. water.

- 5 1. Because by increasing the temperature of ice, it will gain energy, so it changes to liquid water.
 - 2. Because in these processes the matter changes without any change in its structure.
- 6 1. The particles of water release energy and they move slower.
 - 2. The piece of chocolate will melt.
- 1. B A C 2. A - B - D

Exercises on Lesson 3

- 1. c 2. a 3. b 4. C 6. c 7. d 5. d 8. a
 - 9. b
- 2 1. c 2. a 3. e 4. d
- 3 1. (56) 2. (1) 3. (1) 4. (1) 5. (%) 6. (x) 7. (\sqrt) 8. (x) 9. (₺)
- 1. Evaporation process.
 - 2. Condensation process.
 - Mixture.
- 4. Compound.
- 5 1. gas
- 2. solid
- 3. melting evaporation
- 4. thermal
- 6. compound. 5. solid – liquid
- 7. filtration
- 8. evaporation

- 6 1. Because thermal energy of the water vapor transferred to the cold surface, so the particles of water move slower and get close together causing water vapor changing into water.
 - 2. Because they are formed of two or more materials.
 - 3. Because the particles of water are smaller than that of soil.
- 1. They will move faster and spread more, that change water into water vapor.
 - 2. The water will evaporate leaving the salt in the container.

2. (1)

- 9 1. solid
- 2. gas

3. (*)

- 3. liquid
- 4. solid and liquid

Exercises on Lesson 4

- 3. a 2. c 1. b 4. c 5. b 6. d
- 2. (1) 3. (1) 2 1. (%) 4. (1) 5. (34) 6. (x)
- 1. compounds 2. the same
 - 3. color 4. mixture - mass - properties
 - 5. changed.
- Because mixing baking soda with vinegar produce gas causing bubbles which means that a compound is formed.

- 5 The mass and properties of sugar don't change.
- 6 1.5 gm
- 2. 10 gm

8. c

- 3. changed into new color.
- 4. C

- 2 d 3. b 4. b
 - 5. a 6. d 7. b
- 9. a
- 2. (1) 3. (1)
 - 5. (\(\sigma\)) 6. (\(\mathbf{x}\)) 7. (\(\mathbf{x}\))
 - 9. (1)
- 3 1. filtration
 - 2. physical chemical.
 - 3. new.
 - 4. oxygen chemical
 - 5. physical chemical
- 1. Because the components of mixture are physically combined together that means they don't react together.
 - 2. Because it consists of a mixture of some gases.
 - 3. Because making fruit salad don't form new substance.
 - 4. Because the taste of the bread is not like its ingredients which means that a new substance is formed.

- 5 1. The water will evaporate leaving the salt in the container.
 - 2. The piece of metal will lose it's shining.
- 6 Because mixing vinegar with baking soda produces gas bubbles which cause inflating of the balloon.

- 1 1.c 2.b 3.d 4.a 5.d 6.b 7.c 8.b 9.d
- 2 1.b 2.d 3.a 4.c
- 3 1. (√) 2. (*) 3. (*) 4. (√) 5. (*) 6. (√) 7. (√)
- 4 1. chemical 2. physical
 - 3. substance properties.
 - 4. chemical
 - 5. chemical physical
 - 6. chemical physical
- 1. Because when iron reacts with oxygen and water it rusts (form a chemical substance called iron oxide).
 - Due to the chemical change that happens to the milk causing it produce a strong bad odor.

- 1. A new substance is formed and its color is dark blue.
 - 2. They release heat that can start a fire.
- 1. Chemical change.
 - 2. oxygen water rusting.
- The ice cube will melt and changes into water.
 - Physical change, because it is the change of the state of water without any change in its structure.

Exercises on Lesson 7

- 1 1. d 2. b 3. d 4. b 5. a 6. b
- 2 1. (*) 2. (√) 3. (*) 4. (*) 5. (√) 6. (*) 7. (*)
- 3 1. Desalination process.
 - 2. Filtration process.
 - 3. Evaporation process.
- 4 1. fresh oceans seas.
 - 2. filtration
 - 3. energy expensive
 - 4. salt marine
- Because it is a mixture of water, salt, other minerals, gases, living organisms and dead organisms.

- 6 Water vapor rises up leaving salts and other minerals.
- 7 1.1 2.4 3.2 4.3

Model Exam on Concept (2.3)

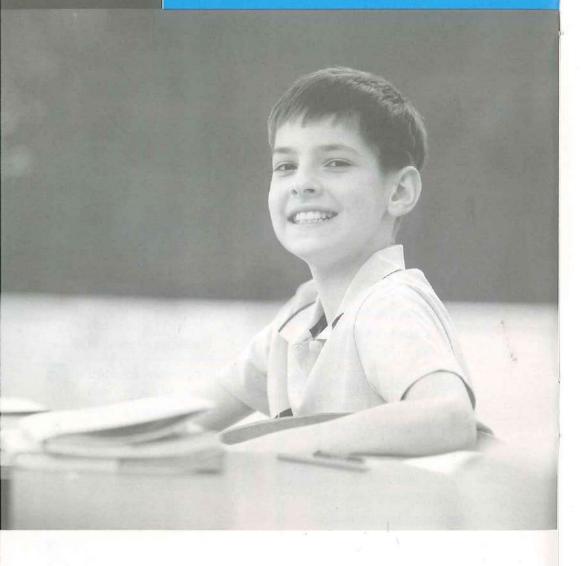
- (A) 1. temperature.
 - 2. compounds
 - 3. new 4. chemical
 - (B) Because air is considered as a gas state of matter.
- 2 (A) 1. a 2. d 3. b 4.
 - (B) The mass and properties of sugar don't change.

- 3 (A) 1. (✓) 2. (×) 3. (×) 4. (✓)
 - (B) 1. Compound.
 - 2. Desalination process.
- 4 (A) 1. b 2. d 3. a 4. d
 - (B) 1. The ice cube will melt and changes into water.
 - Physical change, because it is the change of the state of water without any change in its structure.

Part

2

Guide Answers of Self-Assessments



PART 2

UNIT ONE: Interactions of Organisms

Concept (1.1)

Self-Assessment 1

- 1 (A) 1. a
- 2. c

3. d

3. (%)

- (B) Because plants make their food in their leaves during photosynthesis process.
- 2 (A) 1. (√) 2. (⊁)
 - (B) The plant can't make photosynthesis process, so it will die.
- 3 1. leaves.
 - 2. xylem roots.
 - 3. carbon dioxide.
 - 4. nutrients oxygen.

Self-Assessment 2

- 1 (A) 1. (※) 2. (※) 3. (√)
 - (B) Because it carries water and nutrients from the roots to the leaves.
- (A) 1. Hydroponic 2. Roots. 3. Carbon dioxide gas
 - 3. Carbon dioxide ga:
 - (B) The seeds will germinate and make sprouts and begin to grow.
- 3 1. b
- 2. d

3. a

Self-Assessment 3

- 1 (A) 1. a
- 2. c
- 3. d

- (B) Because light is important to plant growth as plants use light to make their own food.
- 2 (A) 1. (★) 2. (★) 3. (√)
 - (B) The plant can't make its own food and will die.
- 3 1. green yellow. 2. stomata.
 - 3. oxygen gas. 4. xylem.

Self-Assessment 4

- (A) 1. Chlorophyll. 2. root hairs. 3. oxygen.
 - (B) The color of leaves will be turned into the same color of the water in the cup.
- 2 (A) 1. roots. 2. stomata. 3. stem.
 - (B) To transport the food materials downward, from the leaves to the other parts of the plant.
- 3 1.e 2.c 3.a 4.d

Self-Assessment 5

- 1 (A) 1. a 2. b 3. c
 - (B) Because some plants only grow in the water while some plants grow on other plants instead of having roots in the soil.

- 2 (A) 1. (✓) 2. (✓) 3. (※)
 - (B) The plants can't absorb more water from the soil.
- 3 1. veins nutrients
 - 2. sugar phloem.
 - 3. xylem.
 - 4. arteries sugar oxygen

Self-Assessment 6

- 1 (A) 1. (¥) 2. (¥) 3. (√)
 - (B) Because they increase the amount of absorbed water from the soil.
- 2 (A) 1. Phloem. 2. Stomata. 3. Reproduction.
 - (B) Plant's leaves will be pale green or yellow.
- 3 1. wind light seeds. 2. water.

Model Exam on Concept (1.1)

- 1 (A) 1. water nutrients roots.
 - 2. stomata
 - 3. wood upright
 - 4. xylem phloem.
 - (B) Because it transports water and nutrient from the roots to the leaves.
- (A) 1. b 2. d 3. a 4. c
 (B) The plant can't produce seeds for reproduction.

- 3 (A) 1. (✓) 2. (✗) 3. (✗) 4. (✓) (B) 1. Chlorophyll. 2. Glucose sugar.
- 4 (A) 1. b 2. c 3. c 4. d (B) 1. the heart 2. roots.

Concept (1.2)

Self-Assessment 7 on Lesson 1

- 1 (A) 1. (*) 2. (*) 3. (*)
 - (B) Because it produces the own food of producers which all consumers are feed on.
- 2 (A) 1. light 2. producers 3. glucose
 - (B) Consumers will not find food, and they will move away to another ecosystem to search for food.
- 3 1. b 2. d 3. a

Self-Assessment 8 till Lesson 2

- 1 (A) 1. b 2. d 3. c
 - (B) Because producers use the light energy of the Sun to make their own food through photosynthesis process.
- 2 (A) 1. Nonliving things (All items are living organisms, except nonliving things).

- Consumers (All items are related to photosynthesis except consumers).
- Snakes (All items are decomposer, while snakes are consumers).
- (B) 1. plant it makes its own food.
 - bird it eats grasshopper which is a primary consumer.
- Producers: They are living organisms, that can make their own food by photosynthesis process.

Consumers: They are living organisms, that feed on producers.

Decomposers: They are living organism, that feed on dead organisms.

Self-Assessment 9 till Lesson 3

- (A) 1. b 2. d 3. c
 - (B) Becuase the living organism that eats plants is considered as a primary consumer.
- (A) 1. Sharks (all items live on land, while sharks live in water).
 - Plants (all items are decomposer, while plants are producers).
 - Bacteria (all items are primary consumers, while bacteria are decomposers).

- (B) Grasses \longrightarrow Deer \longrightarrow Lion (or) Grasses \longrightarrow Deer \longrightarrow Crocodile
- 3 1. d 2. c 3. b 4. d

Self-Assessment (10) till Lesson 4

- (A) 1. Fox (all items are primary consumers, while fox is a secondary consumer).
 - Rabbit (all items are predators, while rabbit is a primary consumer).
 - Eagle (all items are primary consumers, while eagle is a predator).
 - (B) Because desert ecosystem contains a very small amount of producers.
- 2 (A) grasses sunlight insects – frogs
 - (B) The top predator will move away from this ecosystem to search for food.
- 3 Figure (B)

Self-Assessment (11) till Lesson 5

- 1 (A) 1. b
- 2. d
- d 3. b
- (B) All dead organisms will not be decomposed in this ecosystem.
- (A) 1. Crabs (all items are decomposers, while crabs are scavengers).
 - Bacteria (all items are primary consumers, while bacteria are decomposers).

- 3. House flies (all items are producers, while house flies are scavengers).
- (B) Because this nutrients must be absorbed by producers at first, to make its own food to grow up.
- 3 1. c
- 2. a

3. d

Self-Assessment (12) till Lesson 6

- 1 (A) 1. (√) 2. (≭)
- 3. (1)
- (B) Because they can fly in air.
- 2 (A) 1. a
- 2. b
- 3. c
- (B) All living organisms in this ecosystem are moving away to another healthy ecosystem or they may extinct.
- (3) Supply healthy water.
 - (1) Prevent pollution.
 - (2) Remove waste products.

Model Exam on Concept (1.1) & (1.2)

- (A) 1. d 2. c 3. b
 - (B) The secondary consumers will move away to another ecosystem, or they may extinct.
- 2 (A) 1. (×) 2. (√) 3. (×) 4. (√)
- (A) (1) Grasses. (2) Duck (3) Fox a. tertiary

- b. Decomposers
- c. light chemical photosynthesis
- (B) 1. leaves.
- 2. upright
- 4 (A) 1. Carbon dioxide gas.
 - 2. Root hairs.
 - 3. Decomposition process.
 - 4. Flowers.
 - (B) 1. d
- 2. c

Concept (1.3)

Self-Assessment (13) on Lesson 1

- (A) 1. Sea stars (all items are producers, while sea stars are primary consumers).
 - 2. Algae (all items are primary consumers, while algae are producers).
 - 3. Snakes (all items are top predators, while snakes are secondary consumers).
 - (B) Because any food chain begins with plants (producers) that depend on sunlight to make its own food.
- 2 (A) 1. c
- 2. d
- (B) 1. producers
 - 2. clam

3. d

- 3. secondary consumer
- 4. shark
- Grasses → Deer → Lion

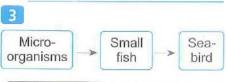
Self-Assessment (14) till Lesson 2

- (A) 1. Decomposers (all items are types of consumers, while the other are decomposers).
 - 2. Clam (all items live on land, while clam lives in water).
 - 3. The Moon (all items form a food chain, while the Moon don't share in any food chain).
 - (B) Because predators feed on other consumers, which previously fed on plants or animals.
- (A) 1. primary consumers.
 - 2. producers 3. sunlight
 - (B) The amount of producers will be finished quickly, and most of primary consumers move away for another ecosystem to search for food.
- 3 1. (**x**) 2. (√) 3. (**x**) 4. (√)

Self-Assessment (15) till Lesson 3

- (A) 1. (%) 2. (1) 3. (%)
 - (B) Because algae will move toward an area where the water is cooler, and so small fish on which seabirds feed on will also move.

- 2 (A) 1. microorganisms.
 - 2. primary consumers
 - 3. small fishes
 - (B) The number of microorganisms on which small fish feed on will increase.



Self-Assessment (16) till Lesson 4

- 1 (A) 1. Coral bleaching
 - 2. plastic 3. microplastics
 - (B) They will get rid of algae that live in their tissues, then turn completely into white and die.
- 2 (A) 1. White 2, real food 3. toxic and sharp
 - (B) Because plastic products are toxic and sharp, that harm coral reefs and other marine organisms.
- 3 I agree, because coral reefs ingest microplastics that produced when UV rays break down plastic waste materials into small parts.

Self-Assessment (17) till Lesson 5

- 1 (A) 1. a
- 2. d
- 3. b
- (B) It will move away looking for other healthy coral reefs.

2 (A) 1. (√) 2. (*) 3. (*)

- (B) Becuase UV rays break down plastic products into microplastics that ingested by coral reefs.
- Algae → Coral reefs → Parrotfish → Sharks

Self-Assessment (18) till Lesson 6

- 1 (A) 1. (★) 2. (✓) 3. (★)
 - (B) The number of this animals species decreases gradually and may extinct.
- (A) 1. d 2. c 3. a
 - (B) Because it decreases the amount of producers which consumers feed on, and also cause floading and riverbanks eroding.
- 1. Zero plastics 2. plastic 3. nursery

Model Exam on Theme (1)

- 1 (A) 1. d 2. c 3. b 4. a
 - (B) Because green plants absorb sunlight during photosynthesis to make its own food and produce oxygen gas that all other living organisms need for breathing.

- (A) 1. Producers. 2. Chlorophyll.
 - 3. Scavengers.
 - 4. Decomposers.
 - (B) Coral reefs will get rid of algae that live in their tissues, and turned completely into white and finally die.
- (A) 1. consumers
 - 2. wind light seeds.
 - 3. preys
 - 4. top predators.

(B)



- 4 (A) 1. grasses foxes.
 - 2. increases decreases.
 - 3. rabbits
 - 4. grasses
 - (B) 1. (¥) 2. (≸) 3. (√) 4. (√)

Concept (2.1)

Self-Assessment (19)

- 1 (A) 1. solid 2. freezes. 3. gas
 - (B) It becomes a gas.
- 2 (A) 1. (※) 2. (√) 3. (※)
 - (B) Because it has mass and volume.

3

Solids	Liquids	Gases
Sugar	Milk	Carbon dioxide
Stone	Blood	Oxygen
Coal	Oil	Water vapor

Self-Assessment 20

- (A) 1. Glass (all items are gases, while glass is solid).
 - Air (all items are solids, while air is gas).
 - Coin (all items are liquids, while coin is solid).
 - (B) Because its volume is definite, while its shape is not definite.
- 2 (A) 1. gas 2. mass 3. soft (B) It will decrease.
- 3 1. (A) \rightarrow (B) \rightarrow (C) 2. (C) \rightarrow (B) \rightarrow (A)

Self-Assessment (21)

- 1 (A) 1. particles.
 2. microscope. 3. solids.
 - (B) To help us see the structure of very small objects.
- 2 (A) 1. liquid 2. gas 3. definite

(B) It will increase.

3 1. (✓) 2. (×) 3. (✓) 4. (×)

Self-Assessment 22

- (A) 1. solid 2. an electron 3. measuring tape.
 - (B) It will not have a definite shape.
- 2 (A) 1. (★) 2. (★) 3. (√)
- (B) Because it is a solid matter.
- $\begin{array}{c}
 3 & 1 \longrightarrow d \longrightarrow 2 \\
 2 \longrightarrow c \longrightarrow 3 \\
 3 \longrightarrow a \longrightarrow 4
 \end{array}$

Self-Assessment 23)

- 1 (A) 1. (✓) 2. (※) 3. (※)
 - (B) Because it has mass and volume.
- (A) 1. solids 2. energy. 3. similar to
 - (B) We cannot know its structure.

3

Regular pattern	Random arrangement
Wood	Water
Plastic	Oxygen
	Oil
	Carbon dioxide

Self-Assessment 24

- 1 (A) 1. (✓) 2. (※) 3. (✓) (B) Because it is a gas.
- 2 (A) 1. volume. 2. solids 3. solids (B) It will increase.
- 3 1. solid 2. liquid 3. gas 4. liquid gas

Model Exam on Concept (2.1)

- (A) 1. particles. 2. solar
 3. solid 4. liquid
 (B) Because it has mass and volume.
- 2 (A) 1. c 2. b 3. c 4. a
 - (B) It will be organized.
- 3 (A) 1. (✓) 2. (※) 3. (※) 4. (※)
 - (B) Coal (all items are gases, while coal is solid).
- 4 (A) 1. Electron microscope.
 2. Model. 3. Solid.
 4. Gas.
 (B) 1. b 2. c

Concept (2.2)

Self-Assessment 25

- (A) 1. slanted 2. climate 3. thermometer.
 - (B) Because roofs of cold weather homes are made of ceramic tiles and they are slanted.
- 2 (A) 1. (★) 2. (✓) 3. (✓)
 (B) 1. Balance.
 2. Measuring cup.
- 3 1. 2 rains. 2. 1 dust dirt. 3. 3 – animals getting inside.

Self-Assessment 26

- (A) 1. b
 2. a
 3. d
 (B) Becuase the mass of one paper clip equals one gram and the one kilogram equals one thousand gram.
- 2 (A) 1. balance. 2. mass 3. physical (B) It will rust.
- 1. mass
 2. volume
 3. gram kilogram.
 4. milliliters–liters–cubic centimeters.

Self-Assessment 27)

(A) 1. c
 2. a
 3. d
 (B) Because mass of matter is changed by changing its size.

- (A) 1. (★)
 (B) It doesn't attract to the magnet.
- 3 1. material (A). 2. material (B). 3. balance.

Self-Assessment (28)

- (A) 1. d 2. b 3. a
 (B) Because glass is transparent and smooth.
- (A) 1. Rusting (all items are physical properties of matter, while rusting is a chemical property of matter).
 - Kilogram (all items are measuring units of volume, while kilogram is a measuring unit of mass).
 - Iron nail (all items are not attracted to the magnet, while iron nail is attracted to the magnet).
 - (B) The piece of cork will float on the surface of water.
- 3 1. B hard strong.
 - 2. C waterproof flexible.
 - 3. A transparent smooth.

Self-Assessment 29

- (A) 1. c 2. a 3. b
 - (B) To guide ships through dangerous water.

- (A) 1. (√)
 (B) You feel hot, because copper is a good conductor of heat.
- 3 1. mass kilogram. 2. bakers 3. length – meter. 4. architects

Model Exam on Concepts (2.1) & (2.2)

- 1 (A) 1. increases. 2. mass 3. microscope 4. rubber
 - (B) Because rusting of iron is a change which happens in iron when it interacts with water and air.
- (A) 1. (√) 2. (*) 3. (*) 4. (√)
 (B) It will have a definite shape.
- (A) 1. b 2. d 3. e 4. a (B) 1. Solids 2. balance.
- (A) 1. c 2. b 3. b 4. c (B) 1. B 2. A

Concept (2.3)

Self-Assessment 30

- 1 (A) 1. mass 2. melting 3. cooled
 - (B) Because water is a liquid matter.
- 2 (A) 1. water. 2. volume 3. faster.

(B) They will melt and change

into liquid water.

3 1. B 4. B

Self-Assessment 31)

2. A

3. C

- (A) 1. thermal water. 2. ice – volume – shape. 3. volume – shape.
 - (B) Because when decreasing the temperature of chocolate, its particles lose energy and move slower, so chocolate changes into solid state.
- (A) 1. Thermal energy. 2. Solid state.
 - 3. Freezing point.
 - (B) Melted chocolate will turned into solid chocolate.
- 3 1. Solid 2. Melting 3. Liquid 4. Freezing 5. physical

Self-Assessment 32

- 1 (A) 1. heating. 2. compounds 3. condensation
 - (B) Because when salty water is boiled, the water will evaporate leaving the salt in the container.
- 2 (A) 1. condensation 2. away from 3. mixture.

- (B) The distance between particles of water vapor will decrease.
- 1. Ice. 2. Water 3. water vapor 4. Melting
 - 5. Freezing6. Evaporation7. Condensation

Self-Assessment 33

- (A) 1. shape 2. gas 3. mass – properties
 - (B) Because by cooling the thermal energy of liquid water is losed, so its particles get close together and changed into ice.
- 2 (A) 1. faster 2. solid
 3. mixture
 (B) It will change into liquid water.
- 3 1. 20 2. 30 3. 30 4. remain as it is.

Self-Assessment 34)

- 1 (A) 1. (*) 2. (\(\sqrt\) 3. (\(\sqrt\)
 - (B) Because burning of paper is considered as a chemical change which form new substances.
- (A) 1. Chemical change.2. Condensation.3. Physical change.
 - (B) C

- 1. Evaporation process.
 - 2. Condensation process.
 - 3. Physical change.
 - 4. Salt only.

Self-Assessment 35)

- 1 (A) 1. c 2. b 3. d
 - (B) Because coloring a paper is a change in matter without any change in its structure.
- 2 (A) 1. gas 2. compound 3. chemical
 - (B) Iron wire will rust.
- 3 1. gas liquid 2. solid liquid 3. Physical change.

Self-Assessment 36

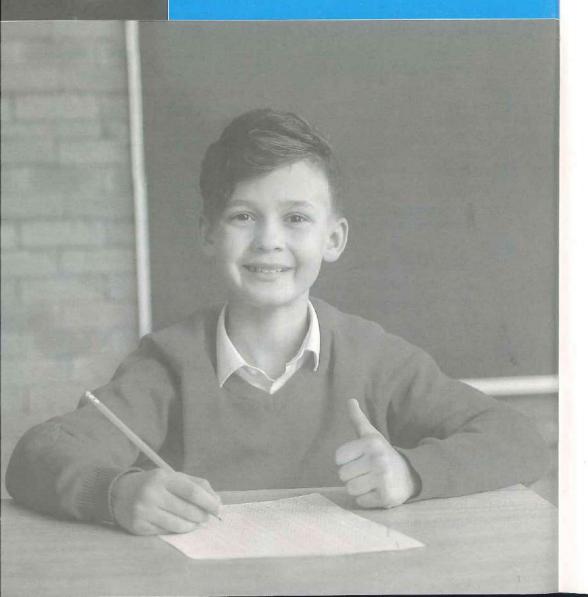
- 1 (A) 1. c 2. b 3. d
 - (B) Because it consists of water, salt, other minerals, gases, living organisms and dead organisms.
- 2 (A) 1. (*) 2. (\(\sigma\) 3. (\(\sigma\)
 - (B) The particle of ice will move faster.
- 3 1. b 2. a 3. a

Model Exam on Theme (2)

- (A) 1. d 2. d 3. c 4. a
 - (B) To examine one tiny particle such as a blood cell.

- 2 (A) 1. rough 2. globe
 3. solid 4. ceramic tiles
 (B) It will melt and changes into
 - (B) It will melt and changes into liquid chocolate.
- (A) 1. Ice (all items are liquid state, while ice is a solid state).
 - Coloring a paper (all items are chemical changes, while coloring a paper is a physical change).
 - Mixing vinegar with baking soda (all items produce mixtures, while mixing vinegar with baking soda produces a compound).
 - Rusting of iron (all items are physical changes, while rusting of iron is a chemical change).
 - (B) 1. Liquid state. 2. Volume.
- 4 (A) 1. b 2. c 3. a
 - (B) 1. solid 2. increase

Guide Answers of Final Examinations



Model Examinations

Model Exam 1

- (A) 1. c 2. c 3. b 4. c
 (B) To protect the desert home from dust and dirt.
- (A) 1. (√) 2. (x) 3. (√) 4. (x)
 (B) It can't make photosynthesis process and it will die.
- (A) 1. pollution.
 - 2. consumers decomposers
 - 3. stomata
 - 4. physical chemical
 - (B) 1. Wood, (all items are liquids, while wood is solid).
 - Sunlight, (all items are parts of the plant, while sunlight is an energy).
- 4 (A) 1. leaves

2. water.

- 3. seeds
- 4. Photosynthesis.
- (B) 1. c

2. d

3. b

Model Exam (2)

- (A) 1. melts
 - 2. substance properties.
 - 3. steel hard
 - 4. balance thermometer
 - (B) It will increase.
- (A) 1. Population. 2. Prey.
 - 3. Water.
 - 4. Plant's roots.

- (B) To get his needed energy and to do his activities.
- (A) 1. c 2. a 3. e 4. d (B) 1. white. 2. wood
- 4 (A) (1) Grasses (2) Duck
 - (3) Fox
 - a. tertiary
 - b. decomposers.
 - c. light chemical
 - (B) 1. Oxygen gas, (all items are used in photosynthesis process, while oxygen gas is produced from photosynthesis process).
 - 2. Oxygen, (all items are solids, while oxygen is a gas).

Model Exam 3

- 1 (A) 1. (%) 2. (\sqrt) 3. (\sqrt) 4. (%)
 - (B) The magnet attracts iron nail but it doesn't attract the plastic spoon.
- 2 (A) 1. shelter. 2. overfishing. 3. extinction. 4. predator 5. toxic
 - (B) 1. leaves 2. roots
- (A) 1. Melting process.
 - 2. The volume.
 - 3. Globe.
 - 4. Tertiary consumers.
 - (B) Because the temperature of ice increases so, it will melt and becomes liquid.

(A) 1. a 2. b 3. C 4. c (B) b

Model Exam 14

- (A) 1. Plant's reproduction.
 - 2. Producers.
 - 3. Seabirds. 4. Solid state.
 - (B) Because helium is lighter than air.
- 2 (A) 1. (√) 2. (×) 3. (√) 4. (√)
 - (B) Water and nutrients will not move up from the root to the leaves.
- (A) 1. A plant 2. bacteria 4. eagle 3. primary 5. bacteria
 - (B) 1. b 2. c 3. a 4. d
- 4 (A) 1. b 2. c 3. a 4. a (B) 1. (x) 2. (√) 3. (x) 4. (x)

Model Exam (5)

- 3. b 1 (A) 1. b 2. b 4. C (B) 1. (√) 2. (√) 3. (x) 4. (x)
- (A) 1. ecosystem. 2. hot - cold 3. flammable - poisonous 4. stomata
 - (B) Because by increasing temperature, it will gain energy and changed into liquid water.

- 3 (A) 1. Physical changes.
 - 2. Evaporation process.
 - 3. Tape Measure.
 - 4. Top predators.
 - (B) The plant can't absorb the energy of sunlight, so it can't make photosynthesis.
- 4 (A) 1. (✗) 2. (√) 3. (✗) 4. (√) (B) 1. c 2. b

Model Exam (6)

- (A) 1. sugar leaves
 - 2. carbon dioxide gas water
 - 3. flooding
 - 4. soft hard
 - (B) To protect this home from animals getting inside.
- 2 (A) 1. c 2. a 3. c 4. c
 - (B) Vinegar (all items are solids, while vinegar is a liquid).
- 3 (A) 1. (✓) 2. (✓) 3. (✗) 4. (✓)
 - (B) The microorganisms will move away to a cooler water and also fish that feed on it.
- 4 (A) 1. Particle. 2. Mass.
 - 3. Condensation process.
 - 4. Plant's leaves.
 - 2. d 3. a (B) 1. c

Model Exam 7

- (A) 1. Overfishing.
 - 2. Oxygen gas.
 - 3. Photosynthesis process.
 - 4. Temperature.
 - (B) The temperature of the matter will decrease.
- 2 (A) 1. (✓) 2. (✓) 3. (※) 4. (※)
 - (B) Because it absorbs the energy of sunlight that helps the plant to make photosynthesis.

2. Gas

- (A) 1. a primary 2. solid - gas 3. helium - air.
 - 4. compound.
 - (B) 1. Solid
 - 3. Liquid
 - 4. Solid and liquid.
- 4 (A) 1. d 2. c 3. d 4. b (B) d

Model Exam 8

- 1 (A) 1. (✓) 2. (※) 3. (✓) 4. (✓)
 - (B) Because it is not flammable and not poisonous.
- 2 (A) 1. c 2. b 3. b 4. a
 - (B) The speed of particles will increase.

- (A) 1. Conduction.
 - 2. Compound.
 - 3. Stomata.
 - 4. Scavengers.
 - (B) Gold (all items are liquids. while gold is solid).
- 4 (A) 1. liquid.
 - 2. space 3. solid - gas. 4. particles.
 - (B) 1. c
- 2. a

Model Exam 9

- 1 (A) 1. a 2. d 3. b 4. c
 - (B) The water of the lake decreases due to evaporation and may be completely disappear.
- 2 (A) 1. physical 2. odor 3. rough 4. chemical
 - (B) Because in these processes the matter changes without any change in its structure.
- 3 (A) 1. (★) 2. (√) 3. (√) 4. (√)
 - (B) 1, solid
- 2. increase
- 4 (A) 1. Mass. 2. Liquid state. 3. Sugar Predator.
 - (B) 1. P 2. C
- 3. P 4. P

Model Exam 10

- 1 (A) 1. (✓) 2. (※) 3. (※) 4. (※)
 - (B) 1. plants
 - 2. Carbon dioxide
- (A) 1. Electron microscope.
 - 2. Paleontologists.
 - 3. Photosynthesis process.
 - 4. Roots.
 - (B) Because it is a solid matter.

- 3 (A) 1. solid 2. high 3. length mass. 4. iron cotton.
 - (B) The size of the balloon will increase.
- (A) 1. d 2. c 3. a 4. a (B) 1. (1) 2. (2)

